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THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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Reading Matter Contents page 52
Alphabetical Index to Advertisers " 235
Classified List of Advertisers " 227
Advertising and Subscription Rates " 234



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See Page 160.



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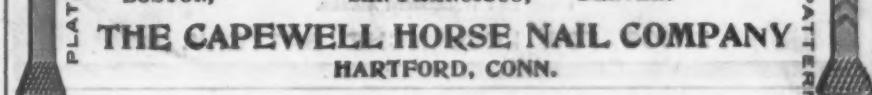


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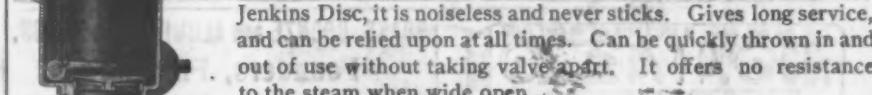


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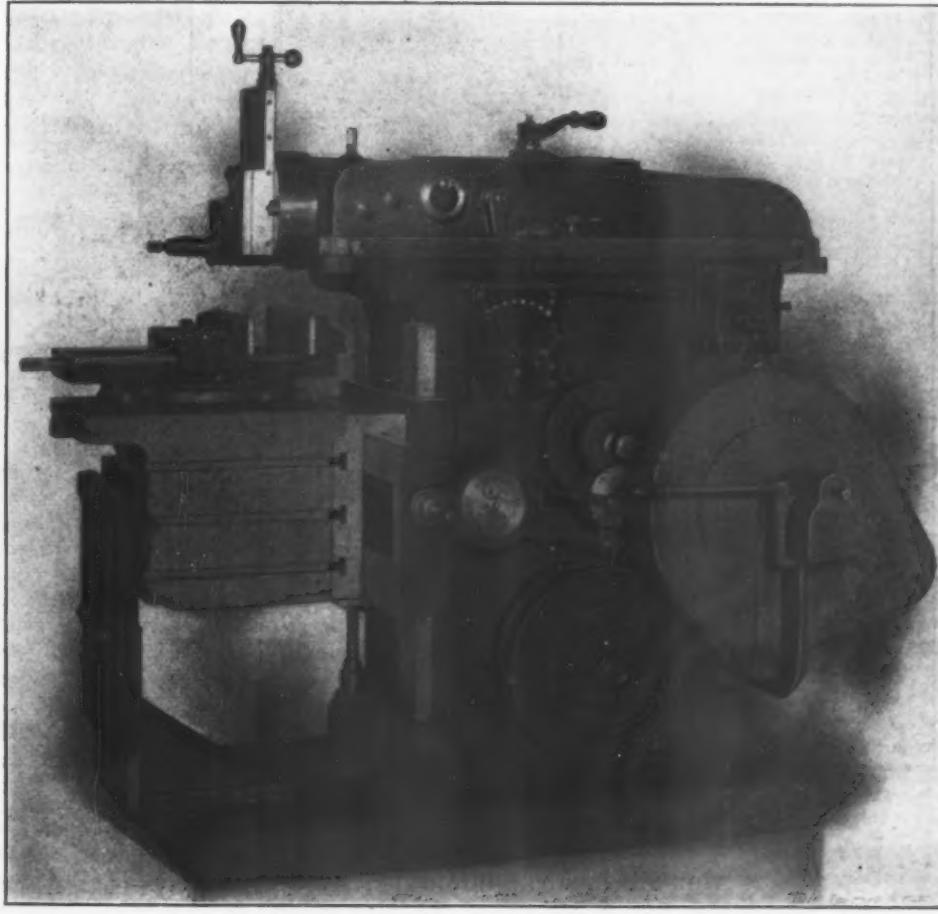
THURSDAY, OCTOBER 1, 1903.

The Stockbridge Motor Driven Shaper.

The Stockbridge Machine Company of Worcester, Mass., are building an improved motor driven shaper which embodies several improvements, including a new crank motion, a method of gibbing the ram, a mechanism for accomplishing the down feed of the head and a double, telescope screw, which permits of the machine being placed on a concrete floor without the necessity of cutting a hole in the floor to take the screw. The shaper has a 24-inch stroke with a four to one quick return. The accompanying engravings show the machine equipped with a direct connected 3 horse-power double commuta-

justs itself to any position of the bar. Both down feed and cross feed screws are fitted with graduated collar reading to sixty-fourths of an inch.

The manner of gibbing the ram is new. The gib is bolted down solidly and the adjusting is done with a taper wedge which is backed up at each end by a screw. This makes the ram perfectly rigid, as though the ways were planed out of solid stock. The same method is employed on the side packing, which does away with packing screws. A friction clutch operated by a lever enables the shaper to be started and stopped while the motor is in operation without stopping the latter. About 70 changes of speed are possible, by means of back gears and



THE STOCKBRIDGE MOTOR DRIVEN SHAPER.

tor Storey motor, which, through a rheostat speed controller, gives to the operator a range of speed of 300 per cent. The drive is communicated by means of a Morse chain. The crank motion which drives the ram is powerful and mechanically new. This motion is accomplished by means of a gear and crank, which gives an even cutting speed through the whole length of the stroke. The automatic feed to the head is operated by means of a dog and pawl, shown on the gib and ram, the pawl operating an internal ratchet which throws the feed in and out through pairs of beveled gears to the head screw. The head has a travel of 9 inches. The screw operates on ball bearings. The feeding is done at the extreme end of the return stroke, so that the tool is not dragged back over the cut and requires little clearance to feed in. The variation of the down feed is from 1-120 to $\frac{1}{2}$ inch. The machine has a cross feed of 30 inches and is automatic in either direction, with a variation of feed of from 1-100 to $\frac{1}{2}$. The cross feed is operated by a rod, which ad-

justs itself to any position of the bar. Both down feed and cross feed screws are fitted with graduated collar reading to sixty-fourths of an inch.

by the variable speed of the motor, from 450 to 2100 revolutions a minute. The dimensions of the shaper are: Length of stroke, 24 inches; vertical travel of table, 15 inches; horizontal travel of table, 30 inches; feed to head, 9 inches; top of table, 14 x 20 inches; ram bearing in column, 36 inches; width of ram in column, 12 inches; vise open, 12 inches; size of vise jaws, 12 x 3 inches; finished weight of machine and countershaft, 3700 pounds.

According to press dispatches from the Pacific Coast, results accomplished this season show that the tin deposits of Cape York, north of Cape Nome, will become an important factor. The output this year has been greater than expected without machinery. Plants have been ordered, and their operation next year will result in a large output. Returning miners state that the benches adjoining the streams of that locality are full of tin. One man's ground has averaged 80 pounds of tin

ore to the cubic yard. At Nome the Greater American Mining Company of New York have filed contracts for assessment work on their property at York.

Gun Foundry Plans Modified by Ordnance Bureau.

WASHINGTON, D. C., September 29, 1903.—The Bureau of Ordnance of the Navy Department has taken important action upon the report of the Gun Foundry Board published in *The Iron Age* for September 24. The recommendations made by the board contemplated a continuing

plete the armaments of vessels already authorized to the time they will be required, and to provide for the probable future needs of the navy, a considerable expansion of the gun plant at the Washington Navy Yard will be necessary. The bureau believes that, in general, it is preferable for the Government itself to manufacture the guns and their accessories for the navy, as not only is the product more satisfactory than if procured by contract, but the fact that the time of completion is under better control when the work is performed in the Government shops is a matter of great importance. When work of such a character is given out by contract there is no certainty as to when it will be completed; neverthe-

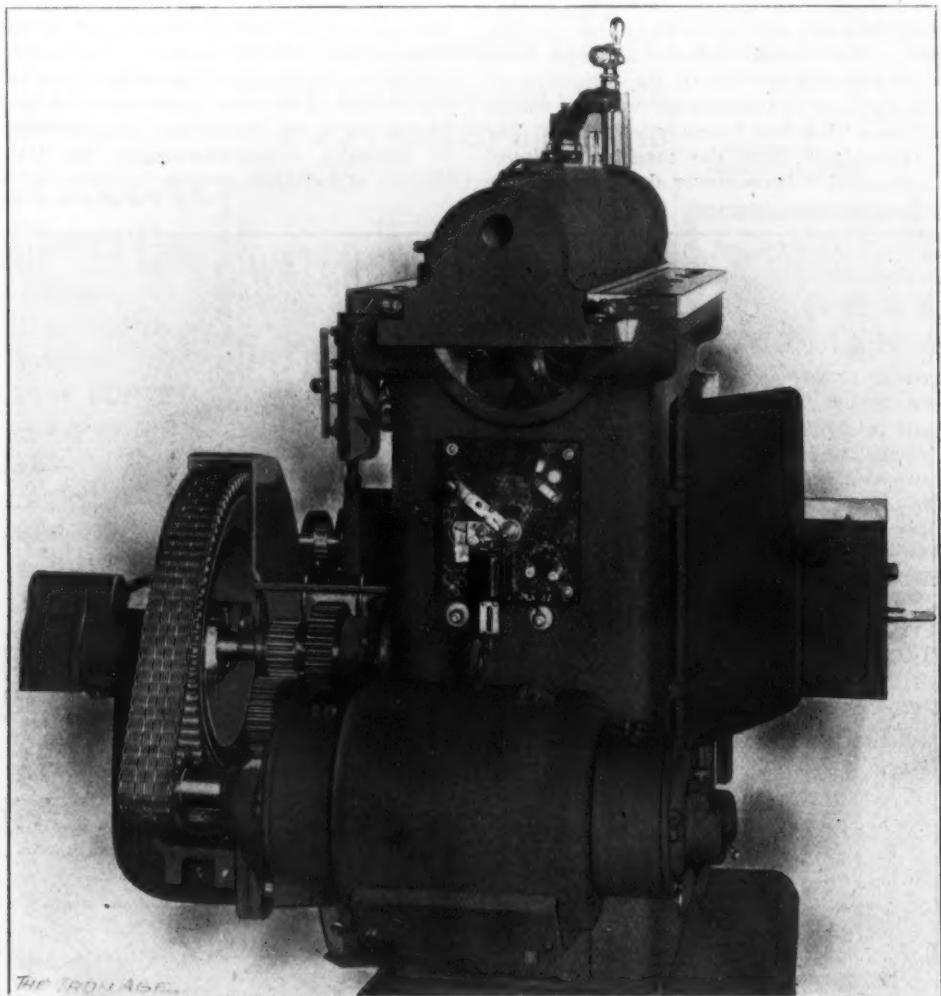


Fig. 2.—Rear View.

THE STOCKBRIDGE MOTOR DRIVEN SHAPER.

programme for the development of the foundry at an ultimate cost of \$4,182,393, the expectation being that Congress would appropriate a portion of this amount in the next naval appropriation bill, and would supply the remainder from time to time within the next two or three years. Rear Admiral O'Neil, Chief of the Bureau of Ordnance, has reached the conclusion, however, that the recommendations of the board should be somewhat modified and the estimates reduced by excluding all unnecessary items and that Congress should be urged not only to make the entire appropriation at the coming session, but to render it immediately available so that work need not be deferred until next July, when the funds carried by the annual naval appropriation bill become available. It is probable that the Secretary of the Navy, in his annual report to Congress, will adopt Admiral O'Neil's suggestion and that Congress will act favorably thereon.

In his indorsement of the board's report Admiral O'Neil says that it is quite evident that the present facilities of the naval gun factory are wholly inadequate for carrying on current work, and that in order to com-

less, the force of circumstances has obliged the bureau to contract for 60 guns of medium caliber and the mounts therefor to supplement the product of the naval gun factory, but this alone will not suffice to procure within the proper limit of time the armament for several of the vessels now under construction. There are but few private establishments in this country which are properly equipped to execute the class of work that is performed at the naval gun factory, and the best and, in fact, the only practicable means of supplying the vessels now under construction with their armament, by the time it is needed, is to make an immediate and substantial increase to the facilities of the naval gun factory. W. L. C.

A new fuel is being manufactured in California which is made from twigs and leaves of the eucalyptus tree mixed with crude petroleum. It is said to burn freely and give good results. Piles made from this tree are immune from attacks by the teredo and last longer than yellow pine. The demand for them is greater than the supply.

Coal Production in 1902.

Increase in Bituminous Nearly Offsets Anthracite Strike.

WASHINGTON, D. C., September 29, 1903.—A preliminary report on the coal production of the United States in 1902 has been prepared by Edward W. Parker, statistician of the United States Geological Survey. The figures, though subject to slight revision because of a few incomplete but unimportant returns, are sufficiently correct to enable comparisons to be made between the output of 1902 and that of former years.

For the first time in the history of the United States the production of coal has reached a total of over 300,000,000 short tons, showing an actual output of 300,930,639 tons of 2000 pounds, valued at \$373,133,843. Of this total the output of anthracite coal amounted to 36,865,710 long tons (equivalent to 41,289,595 short tons), which, as compared with the production of 60,242,560 long tons in 1901, shows a decrease of 23,376,850 long tons, or almost 40 per cent. This decrease, as is well known, was due entirely to the suspension of operations by the strike in the anthracite region from May 10 to October 23, a little over five months. Had it not been for the strike, which practically stopped production in the anthracite region for this length of time, the output for the year would have probably attained a total of over 65,000,000 long tons. The value at the mines of the product in 1902 amounted to \$81,016,937, as against \$112,504,020 in 1901, a loss of about 27 per cent. The average value of the marketed coal sold during the year at the mines was \$2.50 per long ton, the value in 1901 having been \$2.05. The comparatively small amount of anthracite which was mined during the strike, and which brought such exorbitant prices, did not have the effect on the total production that might have been expected.

An interesting feature of the production of anthracite coal is the increase in the recovery of usable fuel from the old and unsightly culm banks that exist throughout the region. Up to 1890 no attempt had been made to recover and utilize this fuel. In that year, however, the washery industry was started, and during the year 41,600 long tons of coal were recovered and marketed. That industry has steadily increased until, in 1901, the washery product amounted to 2,567,335 long tons. Many of the washeries as well as the mines were closed down during the strike, and the production of washery coal fell off to 1,959,466 long tons, which, however, was not in the same proportion as the decrease in the mined product. The percentage of the total product obtained from washeries in 1902 was 6.28, against 4.79 in 1901. In 1899 only 0.11 per cent. of the total product was obtained from washeries.

A large part of the shortage caused by the strike in the anthracite region was made up by the use of bituminous coal and of coke. The shortage was, however, not entirely made up, as many factories, unable to procure any fuel whatever, or, if at all, at prohibitory prices, were obliged to close down entirely, and were unable to resume until prices for fuel again approached normal conditions. The output of bituminous coal (which includes semianthracite and all semibituminous and lignite coals) amounted in 1902 to 259,641,064 short tons, valued at \$292,116,906, as against 225,826,849 short tons, valued at \$236,406,449 in 1901. The increase in the production of bituminous coal was, therefore, 33,814,215 tons in quantity, and \$55,710,457 in value.

Of the 30 States and Territories in which coal was produced in 1902 there were only seven in which the output was less than in 1901. These seven exceptions were California, Michigan, New Mexico, Oregon, Pennsylvania, Texas and Washington. The production of bituminous coal in Pennsylvania in 1902 exceeded that of 1901 by 15,755,874 short tons, but was not sufficient to overcome the great loss in anthracite production. The States in which the more important increases occurred were Illinois, which gained 5,547,751 short tons, or a little more than 20 per cent. over 1901; Colorado, whose increase was 2,314,412 short tons, or about 40 per cent.; Ohio, with a

gain of 2,444,577 short tons, not quite 12 per cent.; Indiana, with an increase of 2,268,371 short tons, or nearly 33 per cent.; Alabama, with a gain of 1,490,865 short tons, or 16 per cent., and Kentucky, whose output increased 1,193,176 short tons, or a little over 20 per cent.

The following table shows the quantity and value of the production by States in 1902 as compared with 1901:

	1901.		1902.	
	Quantity. Short tons.	Value. \$	Quantity. Short tons.	Value. \$
Alabama . . .	9,099,052	\$10,000,892	10,598,917	\$12,505,798
Arkansas . . .	1,816,136	2,068,613	2,028,968	2,639,055
California and Alaska . . .	151,070	304,106	85,496	256,398
Colorado . . .	5,700,015	6,441,891	8,014,427	9,036,999
Georgia and North Caro- lina . . .	354,825	426,685	437,083	623,518
Idaho . . .			1,250	3,300
Illinois . . .	27,331,552	28,163,937	32,879,303	35,221,959
Indiana . . .	6,918,225	7,017,143	9,186,596	10,116,667
Indian Ter- ritory . . .	2,421,781	3,915,268	2,769,895	4,187,554
Iowa . . .	5,617,499	7,822,805	5,896,245	8,641,484
Kansas . . .	4,900,528	5,991,599	5,265,490	6,850,466
Kentucky . . .	5,469,986	5,213,076	6,663,062	6,556,278
Maryland . . .	5,113,127	5,046,491	5,271,609	6,329,119
Michigan . . .	1,241,241	1,753,064	964,718	1,653,192
Missouri . . .	3,802,088	4,707,164	3,855,935	5,316,933
Montana . . .	1,396,081	2,009,316	1,484,277	2,448,526
New Mexico . . .	1,086,546	1,546,632	1,048,763	1,500,230
North Da- kota . . .	166,601	214,151	216,871	312,780
Ohio . . .	20,943,807	20,928,158	23,388,384	26,758,721
Oregon . . .	69,011	173,646	63,150	153,675
Pennsylvania :				
Anthracite	67,471,667	112,504,020	41,289,595	81,016,937
Bituminous	82,305,946	81,397,586	98,061,820	105,413,251
Tennessee . . .	3,633,290	4,067,389	4,393,777	5,411,840
Texas . . .	1,107,953	1,907,024	902,882	1,477,745
Utah . . .	1,322,614	1,666,082	1,574,022	1,796,567
Virginia . . .	2,725,873	2,353,989	3,177,528	2,538,694
Washington . . .	2,578,217	4,271,076	2,400,221	4,389,806
West Vir- ginia . . .	24,068,402	20,848,184	24,479,804	24,459,460
Wyoming . . .	4,485,374	6,060,462	4,520,591	5,507,881
Totals . . .	293,298,516	\$348,910,469	300,930,659	\$373,133,843

W. L. C.

Carborundum Company Extensions.

The Carborundum Company are again making enlargements of their plant at Niagara Falls—a fact which is of special interest in illustrating the growth of an entirely new industry. Carborundum was invented in 1891. The first commercial furnace of the company had a capacity of $\frac{1}{4}$ pound a day, and the first sale made was a little lot of 20 carats, sent out on an order from a jewelry house, at a price of 25 cents a carat, equal to \$450 a pound. These small furnaces sufficed to supply all demands for the new abrasive for nearly two years, when they were replaced by what seemed at that time to be enormous furnaces, requiring the use of 150 electrical horse-power.

In 1896 the company built the plant at Niagara Falls, employing furnaces using 1000 electrical horse-power, with a capacity far in excess of the demands at that time. By 1900 the demand had more than caught up with the production, however, and the capacity was doubled. Last year another 1000 electrical horse-power was added, but the growth of the business has been so rapid that even with 3000 electrical horse-power the company have for months been unable to fill their orders.

A contract has now been made for 2000 more electrical horse-power, and this will be turned into the works by December of this year, giving the plant a capacity of about 10,000,000 pounds of carborundum per annum. To properly take care of this large amount of power, the company have secured an additional factory site of 4 acres, making in all over 8 acres of ground now covered by the plant. On the new site is being erected a new mixing and furnace building, 134 x 146 feet in size, so planned as to be capable of extension in two directions. The building will have two stories and a basement and will be of fire proof construction throughout. The new furnaces will be run by a current of 2000 horse-power each, which is just double that used by the present furnaces.

Canadian Notes.

Wholesale Hardwaremen of Canada.

TORONTO, September 26, 1903.—On Tuesday, the 22d inst., the Canadian Wholesale Hardware Dealers' Association held its annual meeting in this city. About 20 of the principal dealers in the country were present. Especially well represented were the houses of Toronto and Montreal, the latter city sending the following: F. O. Lewis of Lewis Bros. & Co., W. Starke of Howden, Starke & Co., T. H. Newman of Caverhill, Learmont & Co. and A. Jeanotte of T. H. Hebert & Co. Representing the wire manufacturers were A. E. Hamm of the Dominion Wire Mfg. Company, Montreal, and T. Esmond Peck of Peck, Benny & Co., Lachine. T. B. Lee of the Rice Lewis & Son, Toronto, presided. On Tuesday evening the members were the guests of Mr. Lee at the National Club, where he gave a dinner in their honor.

The meetings on Tuesday and Wednesday were taken up with business which the association did not regard as of public interest and of which, accordingly, no report was given out. It is known, however, that one question before it was not of the association's own raising. It was contributed by the wire manufacturers and was nothing less than a serious disagreement between the Canadian wire drawers and the American Steel & Wire Company. Some time ago the American Steel & Wire Company raised the price of wire rods to what the Canadian wire drawers considered an excessive rate. They had been buying their rods from the company, but after the advance they went elsewhere. Then the American Steel & Wire Company began selling their manufactured wire here at prices deemed low by the Canadian wire manufacturers. This, at all events, was the complaint of the Canadian makers. Among those present at the banquet given by Mr. Lee was G. A. Childs, Canadian sales agent of the American Steel & Wire Company. It would appear, therefore, as if both sides were heard by the association. At all events, better relations were evidently established between the parties at variance. In answer to an inquiry by a newspaper reporter, Mr. Childs said that so far as competing with the Canadian manufacturers was concerned the American Steel & Wire Company was not in the market at all.

Since the meeting of the association one of its officers, Thomas Birkett, M.P., of Ottawa, made the statement in an interview that the Steel & Wire Company had returned to their former prices, and that for the present at least there was no trouble being made in the wholesalers' wire trade by marked differences in the prices at which the goods are bought. He remarked that the loyalty of Canadian dealers to the industries of their own country had blocked the attempt to demoralize prices. Of course, the wholesalers had an interest in the matter as well as the manufacturers, for if one wholesaler in a town was getting wire from United States manufacturers at a price much below that at which another in the same town was getting wire from Canadian makers the effect would be disturbing. It appears the low price campaign lasted but four or five days.

The association elected as its officers for the current year the following members of the trade: President, F. O. Lewis of Lewis Bros. & Co., Montreal; vice-president, John Bowman of the John Bowman Hardware Company, London; secretary-treasurers, Jenkins & Hardy; Executive, Thomas Birkett, M.P., Ottawa; A. Jeanotte, Montreal; W. Shaw, Quebec; C. A. Whiteman, London; A. G. Macpherson, Montreal.

Imperial Steel & Wire Company.

The Imperial Steel & Wire Company have issued their prospectus. Among their directors is John Charlton, M.P., a member of the Joint High Commission for adjusting relations between Canada and the United States. The works are to be in Collingwood. There are to be a wire rod mill, a wire drawing plant, a wire fencing factory and departments for the manufacture of wire nails, screws, &c. From the Cramp Steel Company, Collingwood, Ontario, in which town the wire works are to be situated, the steel billets required are to be obtained. The company have a bonus of \$25,000 from the town of Collingwood.

Material for the Grand Trunk Pacific.

Clause 17 of the Grand Trunk Pacific bill provided that there should be no addition to the cost of construction or to the capital of construction account in respect of customs duties in cases where there is direct importation of supplies by the Government. This meant, according to the interpretation of a high legal authority to whom it was referred by Mr. Osler of the Opposition, that material and supplies could be imported free of duty. As about 1600 miles of the road are to be built and owned by the Dominion, all the rails, &c., directly imported by the Government or the Commission in charge of the work would be exempt from tariff rates. This view had previously been taken by the Canadian Manufacturers' Association, who protested against such an opening of the market. The weighty legal opinion submitted by Mr. Osler caused the Government to defer the consideration of the clause when it came before the House in its due course. The line from Moncton to Winnipeg, when built, is to be turned over to the Grand Trunk Pacific Company, which company are to pay after five years of operation a rental of 3 per cent. on the cost of construction, the Government being bound to keep the cost of construction as low as possible consistently with efficiency of roadway. In the lawyers' opinion, the company could refuse to pay a rental on any part of the cost that has been made up by customs duties paid upon supplies and material imported by the Government. The delegation of the work of construction to a commission does not, according to the same counsel, make the Government less the builder. Nor, to pursue the matter further, do the interpreters of the clause consider that a contractor working under the commission and importing materials himself removes the construction from the Government. He is its agent, and the Government could not charge to capital any duties he might pay and compensate himself for.

When the clause came before the House again Mr. Fitzpatrick, the Solicitor General, had an amendment prepared, making it clear that only supplies imported directly by the Government on capital account for the eastern division of the line should be exempt from customs duties. On all materials imported by private persons or corporations for the purpose of the road duty must be paid.

Bounties on Rolled Steel.

On Friday the Steel Bounties bill was considered in committee by the Dominion Senate. Senator Ellis opposed the bill. He referred to the statement of the Minister of Trade and Commerce that out of \$1,245,000 paid out in bounties in the last year, the Dominion Iron & Steel Company had got \$885,965. Hon. M. McMullen, though a free trader a few years ago, approved the bill and the bounty principle.

Hon. Mr. Edwards entered his protest against bounties on anything. He dissented entirely from Mr. McMullen's views. The principle was taking money from the mass for the benefit of the few. He asked them to look at the result in Germany of the sugar bounty. It had simply meant that everybody in Germany had been paying for Great Britain's cheap sugar. The same thing applied to Mr. McMullen's argument. The Canadian people would pay for some one else to get cheap iron and lead. The condition of the works at the "Soo" and the Dominion works was due to the fact that they had been called into existence by unnatural means.

The bill passed in committee, as did the Lead Bounty bill.

C. A. C. J.

The Wheeling Board of Trade, Wheeling, W. Va., have purchased a large plot of ground on the banks of the Ohio River and are prepared to offer free sites to desirable industries. The property is exceptionally located for manufacturing purposes, having abundant natural gas and shipping connections with all railroads, cheap coal land adjoining, and is 15 minutes by trolley from the heart of the city. In a circular recently issued by the board the advantages of the Wheeling district for the location of manufactures are clearly set forth and a large list of important plants in the Ohio Valley is given.

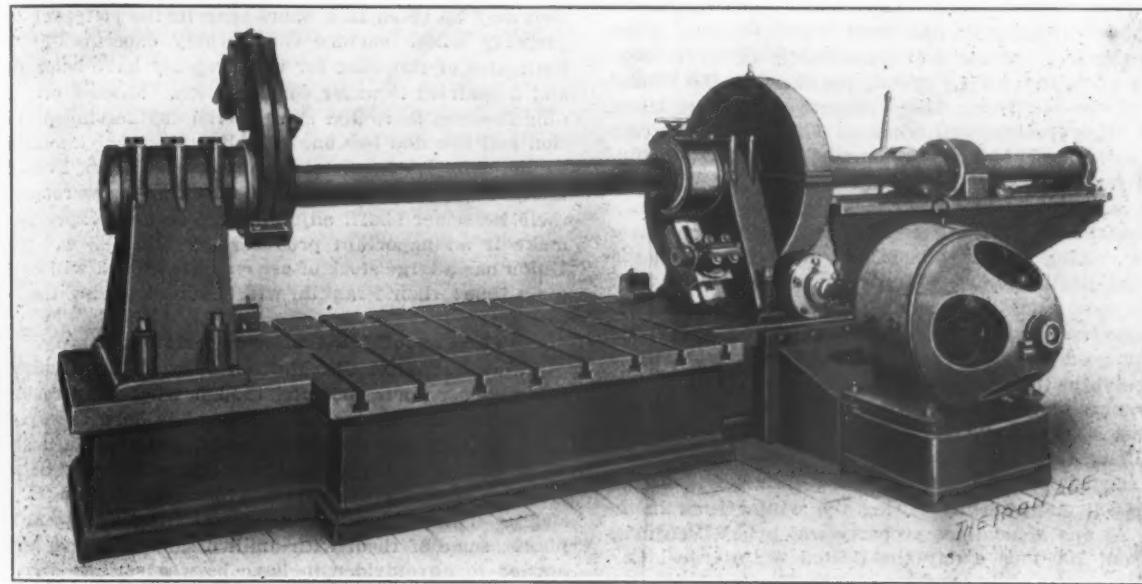
Crocker-Wheeler Motor Driving Barret Boring Machine.

At the time when individual motor drive for machine tools was first commencing to attain popularity many adaptations of the system were made that in the light of present practice would be regarded as crude, to say the least. Later, with the benefit of previous experience and with more and better talent turned in that direction, the number of creditable designs embodying motor drive increased until now it is exceptional to meet with a new scheme which does not possess a fair quota of commendable features. But even among the most approved designs of the present day seldom is so simple and successful an arrangement encountered as the one employed on the drive of the horizontal boring machine illustrated herewith.

The tool is a No. 3 Barret boring machine similar in all particulars to the belt driven style, except that the cone pulley is replaced by a 13 horse-power motor mounted on a special cast iron base, which is bolted to the bed of the machine proper. Over all the equipment

illustration, is secured to the boring bar, the feeding being accomplished by sliding the whole bar endwise. The extended frame, shown at the right of the machine with a third bearing at its outer extremity, contributes to the rigidity of the bar and supports the feeding mechanism. This consists of a sliding carriage containing a sleeve that revolves with the boring bar and may be secured to it at any point, consequently any shifting of the carriage causes a lengthwise movement of the boring bar. A plow on the carriage engages a rack on the frame, allowing direct hand feeding, and there is also a system for automatic feeding much the same as that commonly used on lathes. By this arrangement the bar can be handled very rapidly and as easily as a carriage of a 30-inch lathe. The machine has a continuous feed travel of 48 inches in either direction, and will bore and face both ends of a cylinder at the same time.

With but the one speed reduction the machine is capable of 12 speeds in either direction, varying from 22.7 to 153.7 revolutions per minute, secured by altering the speed of the motor. The latter is equipped with the Crocker-Wheeler system of multiple voltage current sup-



CROCKER-WHEELER MOTOR DRIVING BARRET BORING MACHINE.

occupies a floor space 18 feet $1\frac{1}{2}$ inches long, exclusive of the projection of the boring bar, by 7 feet 4 inches wide. The boring bar is 6 inches in diameter and 16 feet 8 inches long and is made of hammered steel. An Albro worm and worm gear with a ratio of 70 to 1 transmits the power, affording the very smooth and even motion to the boring bar so desirable in cylinder boring and work of a similar character. The worm and worm gear are incased in one casting, which protects the gears and confines the lubricant with the assistance of a stuffing box surrounding the worm shaft.

The bearings in the pedestals supporting the boring bar have their centers 24 inches from the surface of the bed and are bored out 9 inches in diameter. Within these bearings are sleeves; one 23 inches long is contained in the tail pedestal and the other, $30\frac{1}{2}$ inches long, forms the hub of the worm wheel. The sleeves are fixed against endwise displacement but are provided with feathers which engage the keyway extending the length of the splined boring bar so as to cause all to rotate simultaneously. On extensions of the sleeves between the pedestals are mounted arms which carry facing blocks. The latter support the facing tools and are arranged to feed axially or at right angles thereto by the turning of star shaped hand wheels. To make the feed automatic, tripping blocks may be fastened to the bed and set so as to revolve the screws one-fifth of a turn at each revolution of the boring bar.

For inside boring a cutting head, not shown in the il-

lustration, is secured to the boring bar, the feeding being accomplished by sliding the whole bar endwise. The extended frame, shown at the right of the machine with a third bearing at its outer extremity, contributes to the rigidity of the bar and supports the feeding mechanism. This consists of a sliding carriage containing a sleeve that revolves with the boring bar and may be secured to it at any point, consequently any shifting of the carriage causes a lengthwise movement of the boring bar. A plow on the carriage engages a rack on the frame, allowing direct hand feeding, and there is also a system for automatic feeding much the same as that commonly used on lathes. By this arrangement the bar can be handled very rapidly and as easily as a carriage of a 30-inch lathe. The machine has a continuous feed travel of 48 inches in either direction, and will bore and face both ends of a cylinder at the same time.

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Lake Mining Matters.

Curtailment of Mining Operations.

DULUTH, MINN., September 26, 1903.—Mining operations in both the iron and copper regions of Lake Superior are suffering from some curtailment, but the total does not begin to approach what might be feared from a perusal of the daily papers, and is, indeed, a minor matter. While some points will suffer, others will be pushed more heavily than ever, and the general situation is most encouraging. It seems strange that in the copper country, where demand is apparently well up to production and where prices are claimed to be perfectly satisfactory, retrenchment is the rule, but that it is cannot be doubted. Machinery men report a lack of orders, and mining superintendents all say they will reduce all unnecessary expenses for the present. The district is making about 16,000,000 pounds of copper monthly, and there is no accumulation of stocks anywhere on the lake.

In the iron region the demand for some classes of ore has diminished to such an extent that spring schedules of expected shipments have been materially revised. Non-Bessemer ores are not now wanted by the constituent companies of the United States Steel Corporation, for example, as largely as had been hoped for, and mines producing these grades will immediately retrench, some closing down October 1. Among the latter is the Soudan mine of the Minnesota Iron Company at Tower, Minn., where all operations will cease on Thursday. The company will take care of their married men, and will find places for many of the others at other mines. The Ely group will continue mining heavily, and the Mesaba mines of the corporation are likely to make a bigger showing the coming winter than in any preceding closed season. At non-Bessemer mines of old ranges, too, there will be some curtailment; in fact, men have been let out at Negaunee, Ishpeming and on the Menominee range. At Ironwood about 500 have been discharged. There is a decrease in the number of miners employed, on all the lake ranges and by all companies, of about 1500 men in the past 30 days. A good deal of this is to be made up by shifting to other properties, whose ores are just now more sought for, and some old range mines will be run very much more heavily during the winter than in the past. At one Menominee property which has been making about 100 tons a day the United States Steel Corporation expect to increase the output before January 1 to not less than 500 to 600 tons a day, but in the lists of changes and reductions such an item as this is disregarded and overlooked.

For the past few days all steam shovel mines of the Steel Corporation on the Mesaba range have been idle. This was due simply to the vessel situation and to the fear that dock pockets would become so congested that they could not be emptied before cold weather, providing the strike on shipboard was not settled. To-day orders have been wired to all mines to commence again as before, and the volume of ore to docks will be as great as ever in a short time.

Total lake shipments to September 30 will be nearly 20,000,000 tons, the Steel Corporation's proportion of which is in the neighborhood of 12,000,000. Last year the corporation moved a trifle more than 16,000,000 tons, and this was some 25 per cent. above a 12 months' requirements, so that it may be seen that the corporation are not so far behind their needs for the entire coming year as they might be, even were they to close shipments at once. It was announced at the time of the vessel strike, now satisfactorily settled, that corporation shipments would cease about November 1, and this is not unlikely to be the approximate date, though some special ores may be moving a good deal later. Some of the largest independent mines will surely close about that date, generally with their allotments well up. Mahoning is one; Biwabik is another, though its hope of making 1,100,000 tons for the year has been dissipated and it will not make more than 750,000. Stevenson is probably another to close early.

Estimates of this year's production of lake ores are now quite general at 25,000,000 tons, a considerable decline from the previous 12 months. It is an outside fig-

ure, I take it, and the total for the year may fall below this quantity.

The Minnesota Mines.

Whatever may be said of old ranges, Minnesota mines will be working more heavily, in the aggregate, than any past winter season. More stripping work is under contract and contemplation than in any winter, and several large jobs are still pending. Many of these will be carried on throughout the cold weather, contrary to former custom. Generally speaking, stripping contracts are going now at about 40 cents a yard, with higher figures for small jobs. On one small contract, not presenting any unusually difficult factors, contractors wanted 48 cents, but the mining company decided to do the work themselves, and will put on a shovel at the close of the shipping season. A new firm has entered the stripping lists—the Killorin-Philbin Company—and have taken the contract to strip the Commodore mine, at Virginia, to the extent of about 2,000,000 yards. This is a mine that has been operated underground for ten years, and that it is now to be stripped is a strong indication of the way the wind is blowing as to mining methods on the Mesaba, and of the "foot for foot" theory heretofore discussed in this correspondence. A still stronger proof of this condition may be given in a short time in the stripping of a property whose surface considerably exceeds 100 feet. Estimates of stripping for this property have been made and a contract is under consideration. Mesaba ore winning becomes more and more a civil engineering proposition and less and less one of ordinary mining knowledge.

Republic Iron & Steel Company have their Franklin, Mesaba range, nearly worked out, and are now reopening their Bessemer shaft, adjoining the former, expecting to make it an important producer another season. Their Union has a large stock of ore on surface, and will be idle for a time; their Franklin will be mined during the winter.

The Consolidated Lake Superior Company.

Affairs at Sault Ste. Marie are not so threatening as newspaper reports indicate, though what may result if the sensational stories are continued is hard to say. At most of the properties work is still going on in a small way, and it is hoped that arrangements may be concluded immediately to permit their resumption in full swing. The sudden closing of operating and profitable plants, some of them with unfilled sales on hand, would appear to an outsider to have been a serious error of judgment. That negotiations are under way for the segregation and purchase of a portion of the works by heavy capitalists, proficient in the parts of the business they propose to acquire, is well understood. Local and Dominion Governments are favoring the move, and it may be accomplished speedily. There is great value in the Soo plants, and it is beyond the bounds of belief that shortsightedness shall permit them to fall to pieces. The story that the United States Steel Corporation have blocked the efforts at reorganization and the raising of money seems too ridiculous for a moment's belief.

Copper Developments.

The importance of the most recent amalgamation of lake copper interests by the purchase of Copper Range of Trimmountain is scarcely to be overestimated. Trimmountain's mile of mineralized land lies between and separates the more than three miles belonging to Baltic and Champion, both of which have for two years been in the hands of the Copper Range Company. The three properties have 11 working shafts and room for nearly as many more, and are abundantly opened underground. They have 17 miles of openings, and are making monthly about 1500 tons of refined copper. The three have 3160 acres of mineral land, and probably have a greater copper value than any lake company ever had. Their rock runs up to 30 to 35 pounds of refined copper to the ton in the case of Champion, and they are about to make dividends. Trimmountain, the newest to join the amalgamation, has six miles of openings and operates 63 drills. It is to be operated hereafter on the filling system, which has been in use at Baltic. The three mines will, in another year, be much larger producers than now, through the completion of facilities that have been under way at both mines and mills.

D. E. W.

Notes from Mexico.

Meeting of Congress.

DURANGO, September 22, 1903.—The Congress of Mexico reassembled on the 16th inst., the anniversary of the nation's independence. The chief feature of the proceedings was the address of the President, which embodied a comprehensive review of the administrative acts of the different departments of government and of the progress made in education, sanitation, finance and material exploitation. A cheerful view of existing conditions pervades the address, the attention of the law-making body being called to the "universal progress of the country, which is more or less pronounced in every branch of the public administration and of the national industry and wealth." The President also says that "a similar progress is noticeable in all the factors that contribute to the moral development of Mexico and its position and credit among civilized nations."

The recent amendments to the patent and trade-mark laws are referred to, and the fact noted that a special office has been established to deal with matters affecting patents and trade-marks. The number of patents issued during the second half of the last fiscal year was 227, and of trade-marks registered in the same period the number was 176.

Mining titles to the number of 4132, covering an area of 61,396 hectares, were issued during the year, being an increase of 524 titles over the number issued in the previous fiscal year.

Increased production of antimony ore is noted, and a number of title deeds have been granted to mines in which nickel and tin are the predominating values.

In relation to new railway construction the President gives the following interesting data:

The increase of the railway system has been 432 km. The railways of the republic now aggregate 15,918 km., and if railways subject to the jurisdiction of the States and private branches be added, the total is 18,197 km. I may add that the National Railway of Mexico only lacks 92 km. to complete the standardizing of its gauge between this capital and Laredo.

In relation to the purchase of stock in the National Railway Company by the Government some time ago, which caused so much discussion at the time, the President enlarges upon the reasons which induced the movement in a way which leaves room for inference that the Government's entire programme in "railway politics" has not yet been revealed.

A gratifying increase in the public revenues is shown, the total for the fiscal year being in excess of \$74,000,000.

The currency question is considered at some length, but nothing is said as to possible future action by the Government in this regard. In taking steps to bring about the needed stability of the value of the Mexican dollar the purposes which the Government has kept in view have been "to protect the national mining industry, to rectify the point of view, which, unfortunately, was becoming more generally unfavorable to silver, and to give its aid to every measure capable of enlarging the sphere of applicability of that metal."

As to the reception by other governments of Mexico's proposals for co-operation in its plans for currency reform, the President says:

It is gratifying to me to inform you that the steps taken by the Mexican mission abroad have been attended with favorable results and that on all hands the Executive has received indubitable proofs of the esteem enjoyed by this country and of willingness to co-operate in the realization of the desires expressed by the Mexican mission and the mission which, at our request, was appointed for a similar purpose by the Government of the United States.

In its entirety the message is of optimistic tenor, and calculated to strengthen the general feeling of confidence which exists.

Industrial Notes.

The British Consul, in a recent report to his Government, deplores the great falling off in the trade relations between Mexico and Great Britain, and makes suggestions which, he thinks, English manufacturers ought to observe in order to increase their trade. He says: "We cannot afford to ignore the Mexican market, nor a country whose revenues have increased in 20 years from

£2,000,000 to £6,000,000; imports from £3,000,000 to £13,000,000, and exports from £3,000,000 to £13,000,000. I would advise those who really wish to do business in Mexico, and particularly in that part within my consular district, to guarantee fixed salaries to agents for a year or two, with the promise of a certain commission in addition when the sales exceed a certain amount. The Americans have succeeded throughout the country by paying large salaries and being well represented."

Señor Justo Prieto, a lawyer of the City of Mexico, has obtained from the Government, in his own behalf, or in behalf of a company which may be organized, a concession empowering him to use the waters of the Del Verde River, Jimenez, Chihuahua, for irrigation and motive power purposes. A deposit of \$5000 in bonds has been made as a guarantee.

An important work in the way of irrigation is about to be undertaken by the Industrial Mining Company of Bascurito, Chihuahua, who also purpose operating placer mines along the Sinaloa River, which will entail the utilization of considerable machinery.

The formation of another company whose object is to exploit Mexican oil bearing lands is announced. The concern is known as the Oil Fields of Mexico Company, of New York, and incorporated in Delaware, with a capitalization of \$10,000,000, presumably gold. They purpose operating in the State of Vera Cruz.

The contract for sugar mill machinery for the plant to be built by the Tampico Navigation Company, near Tampico, has been placed, the order for mill and engine going to the Whitney Iron Works Company.

A shipment to New York of 2200 bars of copper was made last week by the Teziutlán Copper Company of Teziutlán, Puebla.

The city of Zacatecas is constructing a water works system, and may be in the market for piping and pumps.

The company recently formed to manufacture electric light lamps, and known as the Mexican Incandescent Lamp Company, have secured a site in the capital for their proposed manufactory.

Sommer, Herrmann & Co., the old established German hardware house of the City of Mexico, announce by circular that they will continue to do business under the same firm name, the active partners in the company now being Gustavo Sommer, Gualterio Herrmann, German Durandt, Enrique Renner and Ernesto Otto.

Five thousand feet of cable tramways are to be laid down by the Negociacion Minera de San Salvador, at Santa Catarina, Nuevo Leon, the order for the necessary material having been placed with the Trenton Iron Company of Trenton, N. J.

The Southern Rubber Plantation Company of New Orleans, La., capitalized at \$1,000,000, who own an extensive area of timber lands in the extreme south near the Atlantic coast, intend to engage in lumbering on a large scale, and will require saw mill equipment and machinery.

The United States Consul at Leipzig, Germany, reports that the Monterey Iron & Steel Works Company have contracted for 50,000 tons of coke from Westphalia. The company have been importing coal from Westphalia for some time.

Canadian capitalists are obtaining control of many electric lighting plants in the Republic. They are also at the front in constructing light and power plants. The works of the Puebla Light & Power Company, a Mexican enterprise, have been purchased by a Canadian company, capitalized at \$3,000,000. Members of the new company are interested in the Mexican Light & Power Company, Limited, who are constructing a large light and power plant in the north of the State of Puebla, and in the Dominion Coal Company.

In the fiscal year 1902-03 imports into Mexico aggregated \$75,901,754.96, gold value, and exports \$197,728,968.77, silver value. Included in the former were: Machinery and apparatus, \$10,337,060.06; vehicles, \$1,712,989.68, and arms and explosives, \$1,796,991.85. In the exports precious metals figure to the value of \$91,763,481.31; copper, \$20,122,338.42, and lead, \$5,669,070.21.

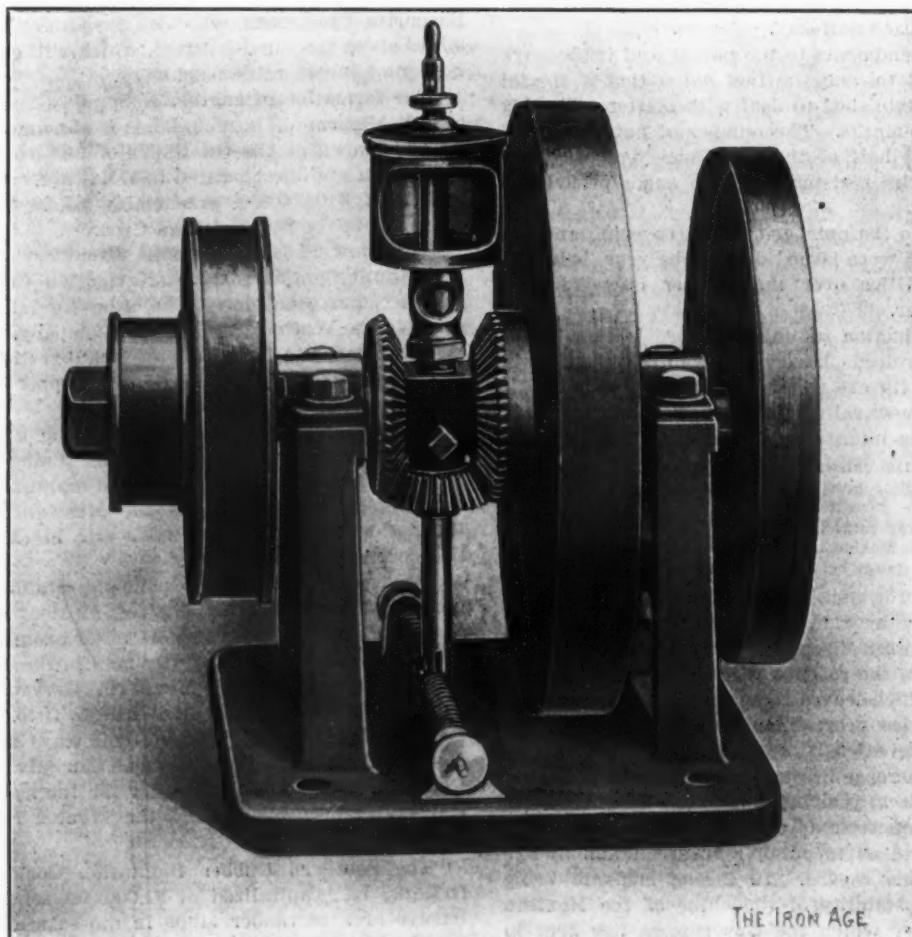
J. J. D.

An Indicating Anglemeter.*

BY C. E. SARGENT, CHICAGO, ILL.

Ever since it has been desirable to operate alternating generators in parallel the question of getting a prime mover the angular velocity variation of which shall come within the limits prescribed by the generator manufacturers has been an important consideration. When Corliss engines were first used for incandescent direct current lighting many of them had such light weight fly wheels that an observer could count the revolutions of the engine by the variations in candle power of the lamps. Generally speaking, the heavier the fly wheel—other things being equal—the less will be the angular velocity variation during a rotation; but the heavier the fly wheel the greater the first cost and the more power

The anglemeter consists of a heavy main frame and base and two uprights, with bearings on each which carry the moving parts. The shaft A, Fig. 3, to which the intermediate bevel pinion axis D and the segment F are rigidly attached, carries the fly wheel and bevel gear B, the driving pulley C and the gear E; the latter are fastened together by the feather I. The rotation of the shaft A and the parts fixed to it is limited by the stops K, Fig. 4. Motion of this shaft and segment F is transmitted to the pinion G and segment F' and the pinion G', which is loose on the pin M and carries the needle O. This oscillating brass shaft has a small hole from end to end, which, with the transverse holes, distributes oil to all working parts without waste from the one oil cup shown in Fig. 1. The driving pulley C is made very light, with two diameters, for high and slow speed engines, and is fastened to gear E by the feather I and nut P. The axis



THE IRON AGE

THE SARGENT INDICATING ANGLEMETER.

required to revolve it in its bearings; hence a fly wheel just heavy enough to vary less than the maximum allowed is more economical than one of greater weight.

In order to be able to determine at sight the actual maximum variation in steam engine fly wheels, and more expressly in the fly wheels of internal combustion engines, with which the writer has more to do, the instrument herewith described was designed. In order to be practical such a device must be applicable to any engine; it must be portable, easily attached, substantially built and direct reading, and it is believed that this instrument will fill these requirements.

If a light pulley is driven by the engine shaft with a flexible, inelastic belt, it should vary in speed commensurate with that of the engine. If a heavy fly wheel at a high velocity is kept in motion by a tension spring having a practically uniform pull, there should be no change from a uniform velocity during a revolution of the engine. The device herein described indicates in circular measure the variation of the engine fly wheel from a uniform velocity.

* Paper presented at the Saratoga meeting of the American Society of Mechanical Engineers.

D is held in a vertical position by the two opposed torsion springs, Fig. 4. By using two springs under tension a large movement for a small increment is obtained, and the anglemeter may be run in either direction; and when running a proper adjustment of the tension nuts brings the needle to a vertical position on the dial. A hair spring around the pinion G', not shown in the cut, eliminates any lost motion in the multiplying gear. The anglemeter is driven by a belt from some part of the engine shaft, which through the intermediate bevel pinion and the tension springs drives the fly wheel in the opposite direction at a uniform velocity.

If the tension of the springs which tend to hold the intermediate bevel pinion axis in a vertical position is equal to the pull necessary to keep the fly wheel rotating at a constant speed, then a change in the angular velocity of the driving pulley which varies with the change of the engine speed allows the axis of the bevel pinion to vary one-half the angle of the driving pulley.

If the diameter of the pulley on the engine shaft is such that the velocity of the anglemeter is 7.2 times faster than the engine, its angular variation during one rotation of the engine will be 7.2 times greater, and the

angular variation of the axis of intermediate bevel pinion from a vertical or normal position will be 3.6 times greater than that of the engine; and the needle, which has an angular movement 100 times greater than the bevel pinion shaft, will therefore have 360 times the angular movement of the engine fly wheel from a uniform rotation. Therefore if the engine fly wheel should vary 1 degree during a rotation the needle on the dial would

of special cotton tape 1 inch wide, but jointed with an ordinary overcast stitch, which makes it practically endless; and as there is no perceptible stretch and but little inclination to creep, the speed of the light driving pulley of the anglemeter should vary exactly with the engine speed.

The amount of deflection of the needle each side of normal is readily seen when the anglemeter is in operation. When applied to a gas engine working under normal conditions, having two impulses per revolution, as good results are obtained as from a single crank steam engine, but if abnormal conditions arise, such as premature or missed ignitions, the trouble is at once located by the needle's usual deflections. On account of the possible friction in tracing the movement of the needle point and



Fig. 2.—Front View.

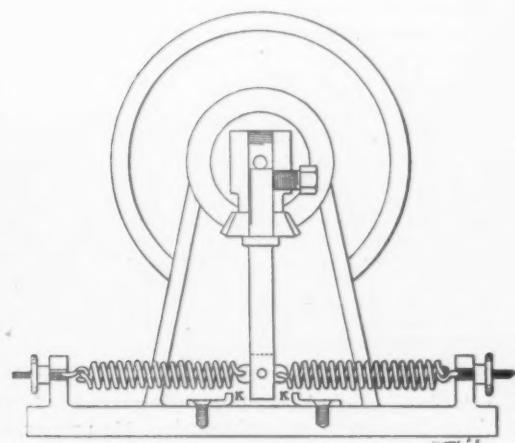


Fig. 4.—Cross Section through Center.

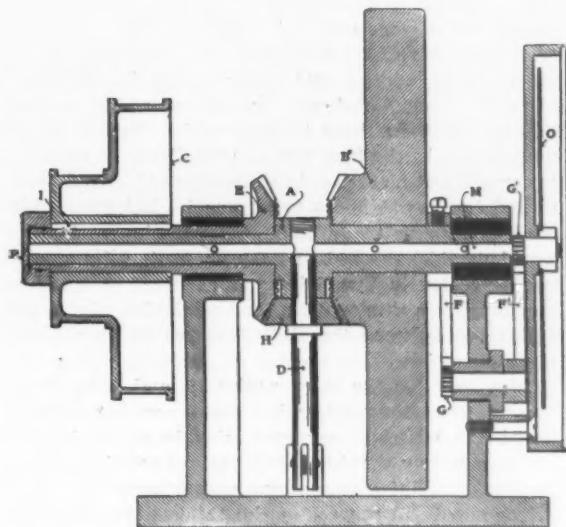


Fig. 3.—Section.

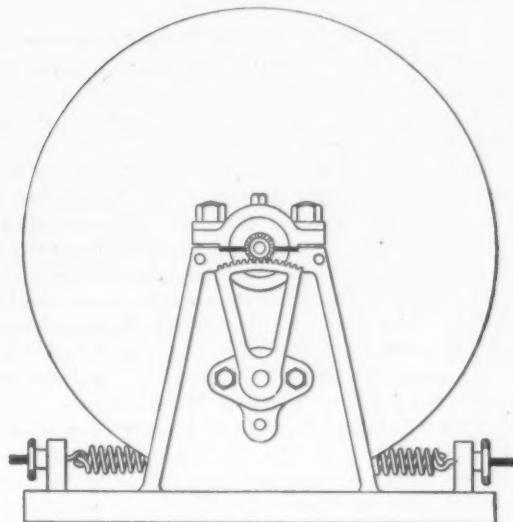


Fig. 5.—Dial Removed.

THE SARGENT INDICATING ANGLEMETER.

vary 360 degrees, or make a complete half revolution each side of the normal position. As the dial has 360 divisions or degrees, 1 minute variation of the engine shaft would show 6 degrees on the dial, and 10 seconds variation of the engine would show 1 degree on the dial.

A belted tachometer from the anglemeter fly wheel shows a uniform speed under extreme angular variations of the engine fly wheel, which might be expected, however, when we consider that for a variation of 1 degree of the engine the change in the length of springs is less than $\frac{1}{4}$ inch, and that for a variation of 1 minute the length of springs varies less than 0.004 inch. If, however, an engine is racing, the speed of the anglemeter fly wheel will rise and fall in proportion to that of the engine, for it makes in a minute some multiple of the engine speed. The belt which is used to drive the anglemeter is a piece

the complicated mechanism of a moving chart, it has been thought best not to make the anglemeter recording, and it is therefore styled an indicating anglemeter.

The special meeting of the committee of the Amalgamated Association to investigate charges of neglect of duty against Theodore Shaffer, president of the Amalgamated Association, met in Pittsburgh last week. The charges were made by a lodge from Niles, Ohio, and William Gibson, vice-president of the Amalgamated Association, is chairman of the committee. President Shaffer in addition to neglect of duty is charged with absenting himself from important meetings and with pursuing a course prejudicial to the interests of the Amalgamated Association. Considerable evidence was heard, but the finding of the committee has not yet been made public.

Notes from Great Britain.

The Week's Fiscal Developments.

LONDON, September 19, 1903.—All thoughts of ordinary commerce have been banished to the background by the dramatic events of the week. The Prime Minister's pronouncement upon the subject of free trade in a brochure of over 30 pages, entitled "Economic Notes on Insular Free Trade," the issue of the Bluebook giving the result of the Cabinet's inquiries into the general bearings of trade under the free trade *régime*, and finally the resignation of Joseph Chamberlain—all these leave us stunned and amazed. A cool consideration of these events, however, leaves no doubt that Joseph Chamberlain has encountered what is probably the worst defeat of his political career. No statesman in my recollection has ever made such a frank avowal of complete failure as he has done in his letter of resignation. The Prime Minister, in accepting the resignation, is equally frank. He says:

If there ever has been any difference between us in connection with this matter, it has only been with regard to the practicability of a proposal which would seem to require on the part of the colonies a limitation in the all-round development of a protective policy, and on the part of this country the establishment of a preference in favor of important Colonial products. On the first of these requirements I say nothing, but if the second involves, as it almost certainly does, taxation, however light, upon foodstuffs, I am convinced with you that public opinion is not yet ripe for such an arrangement. The reasons may easily be found in past political battles and present political misrepresentations.

There can be no doubt that both the Prime Minister and Mr. Chamberlain have accurately gauged public opinion. The tide has set strongly against his proposals, and he will now agitate up and down the country to popularize them if he can. Nor is any mention made, except casually, of the fact that the great self governing colonies have shown but little enthusiasm.

The Prime Minister's Pronouncement.

Even more important than the resignation of Joseph Chamberlain is the pronouncement of the Prime Minister to which I have alluded. The upshot of the whole tract is that he is prepared, on due occasion, to recommend to the country a policy of retaliation, while none the less accepting as sound the general principles of free trade. Inasmuch, however, as retaliation involves meddling with the tariff, the Chancellor of the Exchequer and the Secretary of State for India, both pronounced free traders, have resigned at the same time as the Secretary for the Colonies. The immediate situation depends absolutely upon the actual personal force of the Prime Minister. He is a man not prone to advertising, and accordingly he does not loom so large in the public eye as his ex-colleague, Chamberlain. He has more than once, however, given clear indications of being as forceful and, intellectually, much stronger than Mr. Chamberlain. It cannot be doubted that retaliation as a political cry is much more popular than any cry involving taxation on foodstuffs. As Mr. Balfour has hit upon this scheme, it is not surprising if he has completely eclipsed Mr. Chamberlain. All that can be said at the moment is that we shall see what we shall see.

The Prime Minister's Argument for Retaliation.

As the booklet to which I have referred, entitled "Economic Notes on Insular Free Trade," is certain to be widely discussed in the months to come, it may be well for American readers to be made acquainted with the general line of argument. At the outset the Prime Minister states that he approaches the subject from the free trade point of view. After some preliminary observations, which, in general, recognize the abandonment of *laissez faire* as an absolute dogma, he points out that the contest terminating in 1846 was, in its inner reality, not a fight over an economic theory, but a struggle between two opposing ideals separated by two rival interests. Was the country to become a manufacturing community, or was agriculture to retain its ancient predominance, with all the social and economic consequences involved? He says:

The country decided (in my opinion rightly) in favor of the first of these alternatives. Its benefits, to be sure, have not been unmixed; but it has this conclusive argument in its favor, that a predominantly agricultural Britain could never have supported the men or furnished the money required for her imperial mission.

It must, however, be remembered that this "manufacturing ideal" can only be made tolerable, indeed, can only be realized, if two conditions are satisfied: (a) That inasmuch as conditions of climate render it obligatory to import many of our luxuries, and conditions of population and manufacture render it obligatory to import many of our necessities, a large export trade is necessary in order that these things shall be paid for; (b) that sufficient capital shall always be forthcoming for home investment, in order that this end may be attained, and employment provided for our growing urban population.

Starting, then, upon the basis that we rightly decided half a century ago to become a manufacturing country, he asks what is the precise nature of the injury done to a free trade country by the adoption of protection by its neighbors? A hypothetical case is cited of an industrial system on the Cobdenite model confronted by a world in which every other State adopted an extreme form of protection. What would be the consequence of such a situation to the island itself, and, in a less degree, to other countries? Mr. Balfour cites three possible variations of the problem.

In the first place, he assumes that the productive capacity of this imaginary island is small in amount and restricted in range, and, further, that it can neither grow nor manufacture anything which cannot, without the help of protection, be grown or manufactured at a profit in the protective countries. In such circumstances, the Prime Minister argues that the Cobdenite policy would simply ruin the country. The second variation is of the opposite type. Assume an imaginary island of vast extent, enjoying great varieties of climate, with a population small compared to its food producing area, and with natural resources fitted to minister to all the country's needs. He thinks that such a country, finding its exports gradually diminished by growing foreign tariffs, would suffer some economic loss, but that it would have to manufacture at home much that it had hitherto imported, that capital and labor would be diverted into channels which, at least for a time, would be less advantageous than those through which they had hitherto flowed, yet, in the long run, the condition of such a country would not be seriously worse than if it had been permitted by its neighbors to pursue its industrial development along free trade lines. Though the markets of the world would be closed to it by protection, its own would not be seriously insufficient; domestic free trade would be enough. I think our author might here have written a little essay upon the United States as about fulfilling these conditions.

But now for the third variation, and it is clear that this is what the author has been working up to. An imaginary island is assumed, rich in mineral resources and adequately provided with capital and labor, but possessing no striking advantages over other areas—no natural monopoly in respect of the things it is best fitted to produce. He further supposes that, owing to the law of diminishing returns, it cannot find food within its own limits for a growing population, except at rapidly increasing cost, and that therefore free trade and industrial expansion involve increasing dependence on external areas of food supply. It will be better here to quote the actual words of the Prime Minister:

Now, what would happen to a country thus naturally endowed, and thus industrially organized, if it found itself confronted with a universal system of augmenting tariffs? As an economic example, it stands between our first case and our second. Which does it most resemble?

From the very nature of the case free trade required open markets somewhere. If the free trade country is large enough and varied enough, the open markets within its own territory may, as we have just seen, be sufficient. They will not be sufficient if the character and capabilities of the country are limited in such a way that, while large imports are a vital necessity, the exports required to pay for them are not of a kind which other nations—all, by hypothesis, protectionist—are obliged to take.

I imagine that in the conditions supposed the free

trade island would be compelled to change the character of its industries so as to find the weakest spot in the protective barrier. Each change would probably involve a double loss—the loss of part of the capital and skill devoted to the abandoned industry, and the loss due to the fact that the new industry was presumably less remunerative than the old. Each change would also, by supposition, be sooner or later foiled by some corresponding augmentation of the hostile tariffs. When all was got out of this industrial rearrangement which it was capable of giving, the free trade island would have no resource but to purchase its imports by lowering prices to the point at which it became possible to force its manufactures through the tariff obstacles by which its exports were impeded. If no diminution of profits or wages enabled such a point to be reached, the island would no longer be able to support its existing population; nor would any equilibrium be attained until, at the cost of much suffering, it was reduced to the position of being self sufficient—producing, that is to say, within its own area, all that it consumed—however little soil, climate and mineral resources lent themselves to such a policy.

It is evident that the Prime Minister has Great Britain in his mind in citing this third case. He argues the question, Why does not Great Britain suffer all the ills with which, in the abstract, our hypothetical island is threatened? That it does not is manifest, for the reason that a free trade country is completely environed by a wall of protection, a wall high enough to make export at first difficult and finally impossible. But in actual fact we see Great Britain hampered, indeed, by foreign tariffs, yet able in spite of them to carry on an export trade, which, if it does not increase, yet increases rather than diminishes, and an import trade of unexampled magnitude, for which, be it remembered, we pay by our exports. The difference between the hypothetical case and Great Britain is thus summarized by the Prime Minister:

In what, then, resides the difference between the two cases? In three separate particulars:

a. Foreign countries owe us a great deal of money, which they pay by means of imports into the United Kingdom.
b. Large areas still remain which are not protected at all.
c. Existing protected areas are not completely protected.

It is these three causes, and these alone, which prevent this country undergoing the fate which, in the third example, befell the hypothetical island. Each, therefore, deserves careful consideration.

NATIONAL INCOME AND FOREIGN INVESTMENTS.

In regard to the first point of difference, it may first be noted that under this head freights or commissions are not included. The Prime Minister thinks that if there is no further room at home for the employment of capital, then it is better that the overflow of wealth should be turned to account somewhere else. On the other hand, if capital goes abroad which might have increased the effective demand for British labor, its expatriation is *pro tanto*, a loss to the laborer and the nation, if not to the capitalist himself. He next argues that in many cases this expatriation of capital is encouraged by foreign protective tariffs.

THE FUTURE TRADE OF GREAT BRITAIN.

The Prime Minister has thus far cleared the ground. He announces himself to be a free trader. But the question still bothers him, Whether, in circumstances so little foreseen, a fiscal system suited to a free trade nation in a world of free traders, remains suited in every detail to a free trade nation in a world of protectionists? He says: "I approach this question as a free trader—that is, with a desire to promote free trade as far as contemporary circumstances permit. I throw no doubt on the free trade theory when expressed with due limitations. It tells us that international free trade promotes wealth because it conduces to an international division of labor." Accepting, therefore, in the main the principle of free trade, and recognizing the protective barriers which tend to exclude British products, the Prime Minister begins to consider whether, by some system of retaliation, we could not induce other countries to reduce their tariffs. In this connection it is interesting to note that the Board of Trade estimate the ad valorem

equivalent of the duties levied on our principal products to be—in the case of Russia, 130 per cent.; of the United States of America, 72 per cent.; of Austria-Hungary, 32 per cent.; of France, 30 per cent.; of Italy, 27 per cent.; of Germany, 25 per cent.; of Canada, 16 per cent.; of Belgium, 13 per cent.; of New Zealand, 9 per cent.; of Australia, 7 per cent.; of South Africa, 6 per cent.

A closer examination of the details of British export returns in no way allays the anxiety of the Prime Minister. If we exclude coal from the sum of our exports—still more if we exclude machinery—there are signs, he thinks, not only of a diminution relative to population, but of a diminution absolute. He asks, What is the moral of all this? The free trader argues that even when other countries protect themselves against British products, it is the protected countries who suffer, and that Great Britain in consequence gains in the neutral markets. It is argued, indeed, by the free trader that he must always have a double advantage, one natural and one artificial, over his protected rival, so that his predominance is fully secured in neutral markets, and *a fortiori* in his own. The Prime Minister proceeds:

The unprotected manufacturer is compelled either to restrict his plant to a point well within what may sometimes be required of it, or, in ordinary times, to leave it partially idle.

Even a small excess of supply may lower the price of his goods out of all proportion, and if it does, he not only loses heavily in respect to this small margin of overproduction, but in respect of his whole output.

Now, there is no reason to expect that the plant erected to meet an average demand would reach the exact size most conducive to economy of manufacture. Should it prove to do so it could only be by accident. Neither is it practicable to arrange that the plant shall always be kept working full time. If it is, there must evidently be recurrent periods during which overproduction, with the consequent evils just described, must inevitably take place.

Such is the ordinary position of the manufacturer under free trade. Compare with it the position of his protected rival, who controls his home markets. He is not haunted by the fear of overproduction. If the home demand slackens, compelling him, if he desires to maintain prices, to limit home supply, he is not driven, like his less favored brother, to attain this result by also limiting output. He is not obliged to close part of his works, or to dismiss some of his hands, or to run his machinery on half time. On the contrary, so long as other countries are good enough to offer him open markets, he can dispose of his surplus abroad, at prices no doubt lower, often very much lower, than the prices which his quasi-monopoly enables him to obtain at home, but at prices which, nevertheless, make the double transaction, domestic and foreign, remunerative as a whole.

Why, it may be asked, is no similar policy open to the manufacturer in a free trade country? Because free trade makes it difficult for him to obtain control of his home markets, and because, unless he has this control, it is difficult for him to fix two prices—a low foreign and a high domestic one. If he attempts it he will be undersold in the home market by his rivals, or even, if the divergence of price exceed the double cost of carriage, by himself. His own goods will be reimported. He will become his own most dangerous competitor.

DUMPING.

This leads up to dumping, which, as I have already pointed out to readers of *The Iron Age*, is really the political pivot of this agitation. The Prime Minister was told the other day of a shipbuilder who was able to obtain contracts solely because he had secured a consignment of German steel at a price lower than it could possibly have cost either to a British or a German ironmaster. He asks the question, Why should we refuse to our shipping trade a bounty which the Germans are so generously anxious to confer? He says:

The question is a pertinent one, yet I think the answer is conclusive. There is a utilitarian objection, as well as a sentimental one, to a form of competition which most persons would instinctively regard as unfair.

In the first place it disorganizes industry. The manufacturing capitalist when investing his money in a costly plant has, in any case, many risks to run—new discoveries, new inventions, new fashions. Add to these his loss, actual or anticipated, through the operation of foreign protection, and his burden becomes insensibly increased. But add yet again the further uncertainty and the further loss due to the system I have just been describing, and he is overweighted indeed. Will the hostile combination keep together long enough to ruin him? Can his credit stand the strain? Is it worth while holding on in the face of certain loss and possible ruin? These are questions which the leaders of the threatened industry cannot but ask. And surely the mere fact that they have to be asked must shatter that buoyant energy, which is the very soul of successful enterprise.

All this leads up to the conclusion of the whole matter, which I will quote:

It seems to me clear that we are bound to seek for some mitigation, and that only in one direction can we hope to find it. The source of all the difficulty being protective tariffs imposed by fiscally independent communities, it is plain that we can secure no concession in the direction of a freer exchange, except by negotiation, and that our negotiators can but appeal to self interest, or, in the case of our colonies, to self interest and sentiment combined.

Now, on the free trade theory, self interest should have prevented these tariffs being originally imposed. But it did not, and if argument failed before powerful vested interests were created, it is hardly likely to be effective now.

The only alternative is to do to foreign nations what they always do to each other, and instead of appealing to economic theories, in which they wholly disbelieve, to use fiscal inducements which they thoroughly understand. We, and we alone, among the nations are unable to employ this means of persuasion, not because in our hands it need be ineffectual, but because in obedience to "principle" we have deliberately thrown it away.

The "principle" to which we pay this strangely incongruous tribute is, of course, the principle of "free trade." But what a curious view of free trade it implies. The object which these fiscal inducements are intended to attain is increased free trade, and nothing else; but simply because the "fiscal inducement" may, if it fails of its effect, but not otherwise, involve duties not required for revenue purposes, or in certain cases even carry with it some element of protection to home industries, we are to turn away from it as from an accursed thing.

Here, then, is the economic position of the Prime Minister of Great Britain, and he is undoubtedly backed by the majority of his own party. His arguments, in my opinion, should be carefully studied by American readers, for much may depend upon this *brochure*. If the mere threat of retaliation should induce foreign nations to reduce their tariffs against British goods, then no more need be said; if, on the other hand, the habit of protection persists (and who can doubt that it will?) then the Prime Minister is prepared for a system of retaliation, particularly against America and Germany. S. G. H.

Pacific Coast News.

SAN FRANCISCO, September 22, 1903.—Since the China Steamship Company put on their steamers there has been a close competition for the Chinese and Japanese export trade of this port. The Chinese company were organized primarily to carry Chinese coolies to Mexico, and large numbers have been conveyed thither, but of late the Mexicans are beginning to object strenuously to the Chinese influx, and now it is more than ever a necessity to capture all they can of this trade, and we may expect them to work harder than ever in that direction. Up to the present, however, they have failed to make any impression on the iron and steel trade. As a matter of fact the greater part of the transportation from San Francisco to Chinese and Japanese ports is made up of Eastern goods in transit, as far as value is concerned. The California contribution consists principally of flour, leather, salmon, canned fruits and vegetables, wine and codfish—sometimes as high as 3000 tons of flour—and the new company have made perceptible inroads in the flour trade, as both shippers and consignees on the opposite side are Chinese. It is not likely that they will be able to do much in the transit trade, but they have cut rates, and shippers for a few months should be able to take advantage of this and place American goods in new markets. I say a few months, for no doubt after a while this opposition will disappear, the Chinese retiring of their own volition or being bought out, as their steamers, being of the tramp variety, could not be placed permanently on the route. It looks as though there were many lines of goods that could be placed on these Oriental markets—more labor saving machinery, water pipe, hardware, agricultural implements, sewing machines, typewriters (for the white population), &c. And while transportation is cheap is the time to get in samples of these and other goods not precisely in this line, such as rubber goods, hose, &c. The value of the cargoes now taken out runs from \$200,000 to \$330,000, the latter on the big liner "Korea."

General business has been fairly good during the first half of September. The clearing house exchanges still

keep in advance of those of last year, and as these were in their turn ahead of those of the year preceding, it may be seen that as far as San Francisco is concerned the wave of prosperity has not yet passed. There is nothing that can be said about agricultural prospects as the first rains have yet to come, but most of the farmers and orchardists of the State have done fairly well and the usual crops will be put in for next year. We have had light cereal crops for a couple of years, and the coming year should be one of the bumper kind. At any rate, our farmers have found that with good prices they can stand having wheat and barley crops of less than the average size. For the next six weeks or so there will be a good trade, and should we in the meanwhile be visited by heavy rains the business activity will extend to the close of the year.

The export trade still keeps up well. The "Hongkong Maru" recently cleared with a large cargo which had a fair representation of the iron and steel trades in its makeup. There was an especially large shipment of machinery to Manila, one consignment being valued at \$4000. The total values of machinery were: Manila, \$4853; Japan, \$755; China, \$50. Of hardware there was to Manila \$2088, China \$180, Japan \$150. Bicycles to Japan figured out \$2450, to Manila \$958. Wire valued at \$229 went to Manila. For the same destination there were typewriters valued at \$1565, with others valued at \$400 for China. There was a small lot of hardware for China and Japan. The Australian steamer "Sonoma" took a very large list of bicycles for Australia, and here the shipments of these goods have been increasing very largely this year. On the whole, however, the exports of hardware, bicycles, iron and steel will fall short of some other years.

J. O. L.

The Consolidated Inclinable Open Back Power Press.

The superiority of the inclinable open back type of power press over the single column, or so-called punch press, for general manufacturing purposes, is now generally recognized. The general design of the press here illustrated, which is built by the Consolidated Press & Tool Company, 100 North Clinton street, Chicago, Ill., differs quite materially from that heretofore adopted in presses of this character, only flat and rounded surfaces being presented to the eye.

The shaft is of forged steel and is journaled in self oiling boxes, the reservoirs of which hold oil sufficient to last two or three weeks. Split boxes are used, and provision is made for taking up wear. All the sizes from No. 3 up are provided with lugs for the removable tie rods, the top lugs being slotted to allow the rods to be put in or taken out readily. The method of adjusting from the upright to the inclined position is simple and may be done from either the front or rear by merely reversing the worm shaft.

The solid sleeve connection, Fig. 3, has only one jam nut, B, which is fastened to the sleeve in such a way that the two move up and down together after the nut has been loosened slightly. The connection is adjusted by means of a spanner wrench, which is so designed that the pressure can be applied in one direction only, the strain coming on the outside of the sleeve, or nut, and not on the sides of the holes in same, as is the case where an ordinary starting bar is used. This feature does away with the breaking down of the walls of the holes in the nut and sleeve. The nut takes all the strain, the sleeve acting only as a distance piece, and is made from a forging carefully fitted to the screw, the thread being designed especially to prevent stripping or crumbling even under the heaviest pressure.

The ball joint C D is much larger than usual, the ball being held in place by a solid nut, so arranged as to allow for taking up wear. The connection can be readily taken apart without removing the slides from the press or disturbing the adjustment of the gibbs. The slide is guided in V-gibs carefully scraped to a bearing, both gibbs being provided with means for taking up wear, a feature which enables the operator to always keep the slide absolutely central. The hole in the slide for holding

the shank of the punch is made square and from No. 4 up the slides are provided with lugs in addition to enable wide punches to be held more securely. Provision is made in the slides of all size presses so that the automatic knock out can be fitted at any time without removing the slide from the press.

The clutch consists of a square bolt placed in the shaft collar parallel with the shaft, the bolt being actuated by a spring located in the end, so that when pressure is applied to the treadle the bolt engages the fly wheel, causing the shaft to revolve continuously until the foot

and slotted to receive the clutch bolt, thus acting not only as a striking pin but as a locking pin as well.

The latch, Fig. 1, is a straight piece of tool steel, F, extending back from the shaft and being cushioned at the rear end G. This form of latch permits the placing of the bracket J for holding it directly back of the shaft E. The latch is provided with a safety stop for the clutch

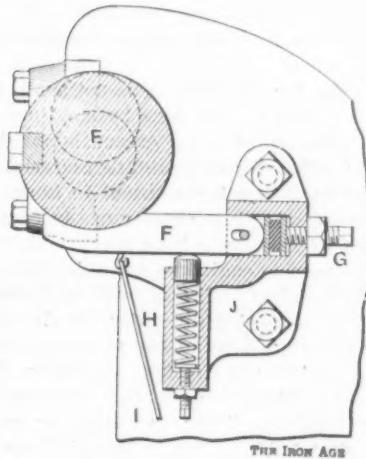


Fig. 1.—Section of Latch.



Fig. 2.

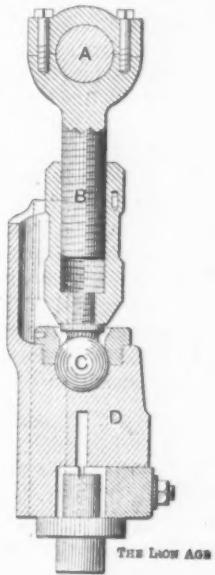


Fig. 3.—Section of Connection.

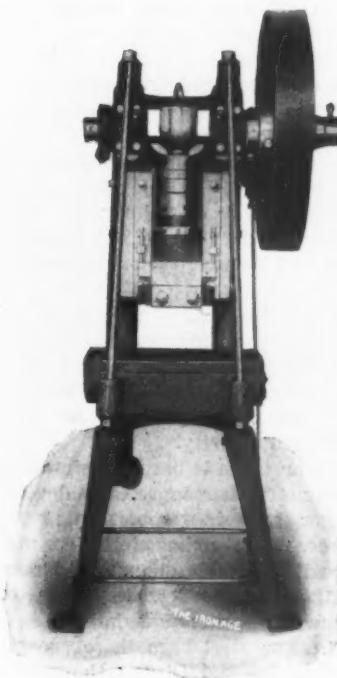


Fig. 4.—Front View.



Fig. 5.—Side View.

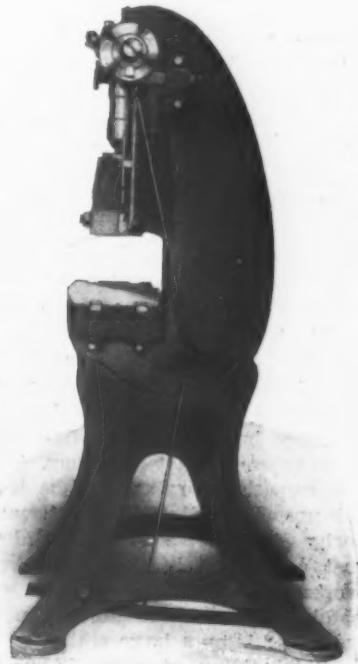


Fig. 6.—Side View Opposite Fig. 5.

THE CONSOLIDATED INCLINABLE OPEN BACK POWER PRESS.

is removed from the treadle, when the latch disengages the clutch bolt and the shaft stops automatically on the up stroke. It is provided with an automatic safety lock, which enables the operator to lock the clutch bolt securely in the collar, simply by giving a knurled bolt a half turn, so that it is impossible to engage the clutch by applying pressure to the treadle, or to unlock the clutch bolt after it is once locked until the shaft has been moved so that it is turned back to the up stroke, when the latch relieves the pressure on the lock, enabling the operator to unlock same. This feature makes it possible to set dies with safety without throwing off the belt. The fly wheel has three clutching points, the wheel pins being extra large

bolt, which makes it impossible for the press to repeat or make a second revolution until the latch has been pulled clear down by the rod H, which is connected to the treadle. The spring for returning the latch is in a pocket forming part of the bracket, and is adjustable. These presses are made in eight sizes, ranging in weight from 600 to 8000 pounds.

One of the most durable woods is sycamore. A statue made from it, now in the Museum of Gizeh at Cairo, is known to be nearly 6000 years old. Notwithstanding this great age it is asserted that the wood itself is entirely sound and natural in appearance.

Industrial Affairs in Scotland.

Pig Iron.

GLASGOW, September 17, 1903.—In our iron warrant market dealings in Cleveland warrants have been somewhat limited of late and prices rather lower owing to "bear" pressure, but there is still some buying on behalf of London operators. A large business is being done with local consumers, both in the steel and foundry departments, for delivery over the next few months. In the Cleveland district, owing to the heavy shipments, makers are not inclined to break prices, and as their stocks are only a few days' make, they are not disposed to reduce their quotations just now. There have been very few transactions in West Coast hematite warrants, the price having receded about 1 shilling per ton, while mixed numbers makers' iron is quoted from 56 shillings 6 pence to 57 shillings 6 per ton, according to brand and time of delivery. Scotch and East Coast hematite are 60 shillings 6 pence and 55 shillings 6 pence per ton respectively, delivered to the steel works in the respective districts. The stocks in the warrant stores are now most trifling. The disposition of them is as under:

	September, 1902.	September, 1903.
	Tons.	Tons.
Scotland: In Connal & Co.'s stores.....	41,290	12,648
Cleveland: North Eastern Railway Company's stores.....	124,700	134,600
Middlesbrough: Hematite in Connal's stores.....	300	300
Cumberland: The Cumberland Storing Company, Limited.....	6,379	6,498
Furness Railway Company's stores.....	21,875	10,274

The following are makers' prices on Scotch iron as now revised:

	No. 1. s. d.
Coltness, f.a.s. Glasgow.....	73 6
Gartsherrie, f.a.s. Glasgow.....	63 6
Summerlee, f.a.s. Glasgow.....	67
Shotts, f.a.s. Glasgow.....	66
Calder, f.a.s. Glasgow.....	63
Langloan, f.a.s. Glasgow.....	70 6
Dalmellington, f.a.s. Ayr.....	56
Eglinton, f.a.s. Ardrossan.....	57
Glengarnock, f.a.s. Ardrossan.....	62 6
Clyde, f.a.s. Glasgow.....	63
Carnbroe, f.a.s. Glasgow.....	56 6
G. M. B., f.a.s. Glasgow.....	54 6
Scotch hematite, f.o.t. steel works.....	60 6

Promise of Better Conditions.

The last quarter of the business year, upon which we are about to enter, holds more promise than did the opening of the second half of the year. There is now less disposition to talk of trade depression. The position is not rosy, but at the same time prospects for the immediate future are not so gloomy. Things are not certainly just as satisfactory as could be desired, but we have had a long spell of industrial activity, and even now in the majority of trades machinery is still running at a fair rate, and comparatively steady employment is got by our workmen. There are, however, complaints that prices obtainable are out of proportion to costs, although the turn over is on a large scale.

Shipbuilding, of course, is not flourishing, and yet no great number of men are unemployed in that trade, although the amount of new work which has been coming forward has been insufficient to take the place of the tonnage put into the water. There are, however, still considerable Admiralty orders to be given out. And the time must approach when those ship owners who sold out when prices were high and reserved the money will decide upon the advisability of increasing their fleets. The present condition of the freight market certainly lends no inducement to owners to enter into fresh contracts at the moment, but owners do not as a rule wait until an actual improvement in freights has taken place. They have to anticipate things to a certain extent, and the time may not be very far off when they will begin to order new boats. For one thing, they must recognize that there is at present little chance of costs coming lower to any appreciable extent.

Heavy Consumption of Iron.

One indication of the extent of trade doing at the moment is to be found in the consumption of pig iron, and

this appears to be on quite as large a scale as ever, notwithstanding the fact that the abnormal demand from the United States has ceased. Scotch make is going into consumption as fast as it is being produced, in addition to which the imports of Cleveland iron to Scotland for the past eight months show an increase of close to 50,000 tons. Makers have no stocks and require time to deliver odd parcels. The pressure for deliveries has of late been so great that Scotch makers advanced their quotations from 6 pence to 1 shilling per ton. Buying was somewhat checked by the rise in money, but sellers now report that purchasers are again coming forward. The make in Scotland cannot very well be increased; in fact, the tendency now will rather be the other way, as many of the furnaces are in need of repair both in Scotland and in Cleveland.

While the outlook for shipbuilding is not good, a large volume of work continues to be done by steel makers in special articles, which to a large extent is making up for the scarcity of orders for shipbuilding material. Steel is being employed here to a large extent in house building, and it is daily coming into greater use in connection with the building of railway rolling stock and in other directions. While marine engineers are quiet the general engineering trade is fairly well employed and steel producers are receiving a good many orders in that connection. The plate mills are busy at the moment, and makers are even pressed for deliveries, especially of light material. Costs are high, nor are there any prospects of immediate reductions, either in wages or raw materials. In the first half of 1898, when pig iron was 6 shillings 6 pence per ton cheaper than at present, ship plates were the same in price as they are here to-day—viz., £5 17s. 6d. per ton, less 5 per cent. Angles are today £5 5s., less 5 per cent, but in 1898 they were £5 10s., although pig iron was 6 shillings 6 pence cheaper. On boiler plates a fair amount of work is doing. While there is now little or no call for material from the United States, Canada is a good customer, and from other countries the demand is equal to what it has been for some years, but German competition is very keen.

In the Barrow district a quieter tone prevails in the hematite pig iron trade, but this is only looked upon as temporary, as the market seems about to improve. Makers there have reduced their prices for mixed Bessemer numbers. There are now in blast five furnaces less than in the corresponding week of last year. Steel rails are in fairly good demand, but the mills are not fully employed, although large forward sales have been made. Prices are steady at £5 10s. per ton, net, f.o.b. Light rails are quiet. Tram sections are not in large inquiry. Ship plates are in moderate demand, but the orders held are not large enough to maintain continued activity.

In the Northwest the iron trade is barely maintaining itself, and business shows no further appreciable development. A rather stronger tone is the general report throughout the steel trade. For local made billets makers' rates are without really quotable change, and range from £4 12s. 6d. to £4 13s. 6d., but German billets continue to stiffen slightly and are being quoted about £4 8s. up to £4 10s., delivered. For steel bars there are still low quotations of about £6 5s. and £6 6s.; the general price is, however, about £6 7s. 6d. to £6 10s.

There has been quite a run of new orders this week from India, Africa and South America in connection with steel bridges and railway rolling stock. The contemplated outlay of £9,000,000 on railway extensions in the Transvaal and Orange River Colony will bring out a lot of new business, for which there will be keen competition in which, no doubt, America will join.

A press dispatch from Cologne, Germany, dated September 23, states that the steel syndicate, embracing all the large makers, has been renewed for five years in the form of a stock company, who are to handle the total product. The stock company are believed to be an advance in the simple syndicate idea. It will effect a closer community of interests. To each member will be allotted a fixed percentage of the total output. Each will contribute 5 marks for every ton produced over the quota and will receive 5 marks for each ton below the quota.

A World's Record in Coal Hoisting.

The steadily increasing bulk in which coal is conveyed by sea and rail and stored for boiler service in high pockets at power stations and plants has led to a demand for increased speed in the necessary hoisting and handling machinery. Demurrage on steamships and cars is an item to be carefully avoided in economical management, and the large cargoes now shipped to terminals can only be handled with success by specially designed high speed machinery. The problem is different from and more difficult than the familiar one of bulk unloading and storage of coal, ore or similar materials on the ground level from vessels. The element of height materially affects the machinery design. With a single tower, hoisting to about 50 feet above tidewater, 40 to 60 tons an hour was, until recently, the common speed, and 90 to 100 tons was only attained with difficulty in exceptionally favorable circumstances.

The work demanded of coal hoisting towers and their machinery is of the hardest description, both from the unskilled nature of the labor employed and the shocks

to the discharging hopper, nearly 100 feet above, is only six seconds, while the round trip, involving the operations of lowering and moving the shovel out on the boom, opening the former, digging up 2 tons of coal, raising it to the level of the hopper and discharging it therein, is frequently performed in 22 seconds.

The installation shown in the illustration follows in general design, but in heavier proportion, the standard Hunt steeple tower rig, the moving gear and coal cracker being electrically driven and the hoisting engine direct connected. The towers have to traverse overhead the whole length of the coal storage pocket and to move 30 feet at a time without changing steam connection. In this way a single tower can operate on each hatch of a vessel in turn, or several towers can work simultaneously. The boom, made to fold up for the free manipulation of vessels with their rigging, has an overhang of 40 feet, and enables the tower to operate on coal steamers of the widest beam and largest dimensions.

Dominion Iron & Steel Company's Coal Arrangements.

J. H. Plummer, Frederic Nichols, Wm. McMaster and W. B. Ross, constituting a Committee of Arrangements for the directors of the Dominion Iron & Steel Company, have submitted a report on the company's relations with the Dominion Coal Company, from which the following interesting statement is taken:

The new contract for the supply of coal provides for the same period and the same price as contained in the lease; that is, the contract runs until 1902 and the price until 1909 is fixed at \$1.24 per ton. At that time, and at the end of each five years thereafter, the price may be adjusted on the same principle as in the original contract. In effect the price fluctuates with the average cost of mining in each quinquennial period, \$1.24 being the minimum. Under the new contract all the coal will be supplied that may be required for the present plant, or for new plant of the same capacity. The coal is to be supplied from seams selected by the Steel Company. For the first four years it is to be run-of-mine coal, and thereafter slack coal may be supplied if it can be used to advantage.

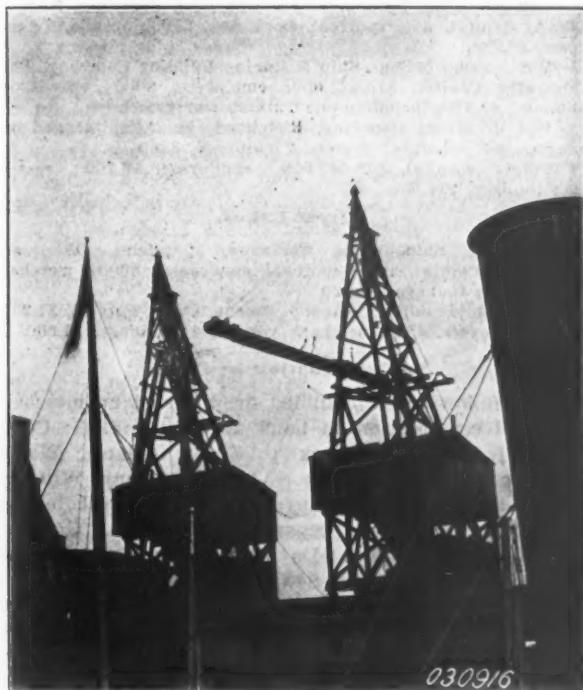
On completion of the present negotiations the company will enter on its future freed from the financial responsibilities of the coal business, with its liabilities lessened by \$2,635,000, and with \$1,500,000 of new money (proceeds of \$1,500,000 6 per cent. second mortgage bonds to be taken by directors at par) provided to complete its plant.

A bill has been introduced into Parliament which, when passed, will benefit us by prolonging the bounties which are given in aid of the manufacture of iron and steel and will also give us the advantage of bounties on certain classes of finished products which are now in whole or in part on the free list.

The directors believe that with the completion of the finishing mills and the washing plant, and with suitable bounties or protection for its products, the company's iron and steel business should become permanently profitable.

At the meeting of the stockholders of the Steel Company at Montreal on September 25 the action of the directors in voting to divorce the steel and coal companies was ratified. It was also voted to authorize the directors to issue \$2,500,000 in second mortgage bonds. This is \$1,000,000 in addition to the \$1,500,000 subscribed for by the directors.

Fall Meeting of the Mining Engineers.—The American Institute of Mining Engineers will hold their eighty-fifth meeting in New York City, the opening session beginning at 8.30 on Tuesday evening, October 13, at the house of the American Society of Mechanical Engineers, 12 West Thirty-first street. Hotel headquarters and bureau of registry and information will be at the Murray Hill Hotel, Forty-first to Forty-first streets and Park avenue. E. E. Olcott, 36 Wall street, is chairman, and T. A. Rickard, 281 Broadway, is the secretary of the local committee. Sessions of the institute will probably be held at Columbia University, the University of New York, the American Museum of Natural History and the new rooms of the New York Chamber of Commerce. Visits will be made to the New York subway and other points of interest. A social reception will be given on Thursday evening, and on Saturday there will be an excursion by steamer to the United States Military Academy at West Point, where special military exercises will be arranged in honor of the institute.



A WORLD'S RECORD IN COAL HOISTING.

to the machinery incidental to the service, and it changes constantly with the nature and size of the coal, which may vary from a soft pea variety contained in open wooden barges, to a hard foreign product in cubes 2 feet square, loaded in steel vessels with small hatches. A great advance in the speed of handling coal from freight vessels and barges has been made recently by the C. W. Hunt Company of West New Brighton, N. Y., at the Lincoln Wharf Power Station of the Boston Elevated Railway Company.

Run of mine bituminous coal was raised 90 feet above the tidewater from one hatch of a vessel and delivered to the storage pockets, cracked to mechanical stoking size, at the rate of 320 tons per hour, by one tower. This is an advance of about 200 per cent. upon the previous best, and marks an important mechanical engineering achievement.

To attain this end the steam engines of 50 to 100 combined horse-power in common use have been replaced by machinery of 300 horse-power, and the coal cracking machine attached to the tower cracks to the proper dimensions for automatic stokers, before passing to the pocket, the enormous quantity of coal, over 5 tons per minute, delivered to it from the hoisting machinery. The ordinary small steam shovel has been supplanted by an automatic one of 2 tons capacity at each lift. The time occupied in raising 2 tons of coal from the hold of a vessel

Steel Shipbuilding.

Official Report Upon the Industry on July 1, 1903.

WASHINGTON, D. C., September 29, 1903.—The Commissioner of Navigation has received from all the shipyards of the country equipped for the building of steel vessels returns showing the capital of each firm and number of men employed and the number and tonnage of merchant ships and Government vessels building on July 1, 1903. A comparison of these figures with corresponding statistics representing the conditions on July 1, 1902, shows a very heavy decline in the construction of merchant ships, which has not been entirely offset by the unusually large amount of Government construction in hand. The most significant feature of the exhibit, however, is the fact that a large proportion of the merchant tonnage now under construction will be completed before the end of the current fiscal year, after which the building of steel steamers on the seaboard promises to be restricted to the demands of our coastwise trade, which are inadequate to keep the yards employed. The Commissioner of Navigation estimates that unless Congress authorizes the construction of an unusually large number of war vessels the seaboard shipyards will be reduced to less than half their capacity before the end of the current fiscal year.

The total number of steel merchant vessels under construction on July 1, 1903, was 88, having a gross tonnage of 255,675 tons, as compared with 104 vessels with a gross tonnage of 347,486 tons on July 1, 1902. The Government vessels under construction on July 1, 1903, numbered 47, with a gross tonnage of 334,147, as compared with 67 vessels, with a gross tonnage of 269,890, on the same date of 1902. The total number of steel vessels under construction on July 1 of the present year was, therefore, 135, with a gross tonnage of 580,822 tons, as compared with 171 vessels, with a gross tonnage of 617,376 tons, on the corresponding date of last year. Following is a summary of the returns received by the Bureau of Navigation:

MERCHANT AND GOVERNMENT CONSTRUCTION.

The Nease & Levy Ship & Engine Building Company, Philadelphia: Capital, \$800,000; employees, 1400; merchant vessels building, 10; aggregate tonnage, 1949; Government vessels building, 2; aggregate tonnage, 12,900.

Buried Dry Dock Company, Port Richmond, Staten Island: Capital, not reported; employees, 900; merchant vessels, 7; tonnage, 6140; Government vessels, 2; tonnage, 1278.

Bath Iron Works, Bath, Maine: Capital and employees, not reported; merchant vessels, 3; tonnage, 900; Government vessels, 2; tonnage, 18,148.

Harlan & Hollingsworth Company, Wilmington, Del.: Capital, not reported; employees, 2000; merchant vessels, 6; tonnage, 9741; Government vessels, 1; tonnage, 340.

Crescent Shipyard, Elizabethport, N. J.: Capital, not reported; employees, 850; merchant vessels, 3; tonnage, 3545; Government vessels, 3; tonnage, 3548.

Fore River Ship & Engine Company, Quincy, Mass.: Capital, \$6,250,000; employees, 4000; merchant vessels, 7; tonnage, 17,339; Government vessels, 4; tonnage, 49,096.

New York Shipbuilding Company, Camden, N. J.: Capital, \$10,000,000; employees, 4200; merchant vessels, 3; tonnage, 30,000; Government vessels, 2; tonnage, 30,500.

Shipowners' Dry Dock Company, Chicago, Ill.: Capital, \$800,000; employees, 200; merchant vessels, 1; tonnage, 352; Government vessels, 1; tonnage, 140.

Jenks Ship Building Company, Port Huron, Mich.: Capital, \$150,000; employees, 450; merchant vessels, 1; tonnage, 4700; Government vessels, 1; tonnage, 718.

Townsend-Downey Shipbuilding Company, Shooter Island, N. Y.: Capital, not reported; employees, 12,000; merchant vessels, 4; tonnage, not reported; Government vessels, 1; tonnage, 626.

Totals: Capital, \$18,000,000; employees, 15,200; merchant vessels building, 45; tonnage, 74,666; Government vessels, 19; tonnage, 117,294.

MERCHANT CONSTRUCTION ONLY.

Maryland Steel Company, Sparrow's Point, Md.: Capital, \$3,000,000; employees, 2000; vessels building, 3; tonnage, 8677.

Merrill-Stevens Engineering Company, Jacksonville, Fla.: Capital, \$250,000; employees, 200; vessels, 1; tonnage, 900.

Risdon Iron & Locomotive Works, San Francisco, Cal.: Capital and employees, not reported; vessels, 1; tonnage, 300.

Perth Amboy Shipbuilding & Engineering Company, Perth Amboy, N. J.: Capital, \$500,000; employees, 200; vessels, 1; tonnage, 2242.

Eastern Shipbuilding Company, New London, Conn.: Capital, not reported; employees, 1800; vessels, 2; tonnage, 42,000.

Delaware River Iron Shipbuilding & Engine Works, Chester, Pa.: Capital, not reported; employees, 1500; vessels, 4; tonnage, 17,450.

T. S. Marvel & Co., Newburg, N. Y.: Capital, \$150,000; employees, 400; vessels, 1; tonnage, 400.

Totals: Capital, \$3,900,000; employees, 6100; vessels building, 13; tonnage, 71,989.

GOVERNMENT CONSTRUCTION ONLY.

Union Iron Works, San Francisco, Cal.: Capital and employees, not reported; vessels building, 5; tonnage, 52,700.

Gas Engine & Power Company and Chas. L. Seabury & Co., Morris Heights, N. Y.: Capital and employees, not reported; vessels, 2; tonnage, 2170.

Iowa Iron Works, Dubuque, Iowa: Capital, \$150,000; employees, 200; vessels, 1; tonnage, 350.

Geo. Lawley & Son Corporation, South Boston, Mass.: Capital and employees, not reported; vessels, 1; tonnage, 166.

Wolff & Zwicker Iron Works, Portland, Ore.: Capital and employees, not reported; vessels, 1; tonnage, 248.

Spedden Shipbuilding & Dry Dock Company, Baltimore, Md.: Capital, \$150,000; employees, 300; vessels, 1; tonnage, 108.

Baltimore Ship Building & Dry Dock Company, Baltimore, Md.: Capital, \$750,000; employees, 500; vessels, 3; tonnage, 1565.

Moran Bros. Company, Seattle, Wash.: Capital, \$2,000,000; employees, 1200; vessels, 1; tonnage, 14,948.

Newport News Shipbuilding & Dry Dock Company, Newport News: Capital, not reported; employees, 6500; vessels, 7; tonnage, 96,238.

Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia: Capital, \$15,531,000; employees, 8000; vessels, 4; tonnage, 45,160, including one Turkish war vessel.

Wm. R. Trigg Company, Richmond, Va.: Capital and employees, not reported; vessels, 2; tonnage, 3200.

Totals: Capital, \$18,581,000; employees, 16,700; vessels, 28; tonnage, 216,853.

GRAND LAKES.

American Shipbuilding Company, Cleveland, Ohio, and branches: Capital, not reported; employees, 8000; merchant vessels, 26; tonnage, 97,520.

Craig Shipbuilding Company, Toledo, Ohio: Capital, \$1,250,000; employees, 452; merchant vessels, 4; tonnage, 11,500.

NO CONSTRUCTION IN HAND.

The following shipbuilding firms report no merchant or naval construction in hand on July 1, 1903: Continental Iron Works, Brooklyn, N. Y.; Atlantic Works, East Boston, Mass.; Pusey & Jones Company, Wilmington, Del.; Kensington Shipyard Company, Philadelphia, Pa.; Herreshoff Mfg. Company, Bristol, R. I.; Quintard Iron Works, New York; David Bell Engineering Works, Buffalo, N. Y.; Arthur Sewall, Bath, Maine; People's Machine & Boiler Works, Baltimore, Md.; Pacific Steel Barge Company, Everett, Wash.; Johnston Bros., Ferrysburg, Mich.; Starin Shipyard & Iron Works, New York City, and Ed. J. Howard, Jeffersonville, Ind.

Summary.

	MERCHANT Em- ployees.	Merchant vessels.	GOVERNMENT vessels.	No.	Tonnage.	No.	Tonnage.
Merchant and Gov- ernment	.....	\$18,000,000	15,200	45	74,666	19	117,294
Merchant only...	3,900,000	6,100	13	71,989	...	...	...
Government only.	18,581,000	16,700	28	216,853	...	...	...
Great Lakes.....	1,250,000	8,452	30	109,020	...	...	...

The following table shows the number and tonnage of steel vessels under construction at the dates named, and gives a fair idea of recent conditions of steel shipbuilding in the United States:

Date.	Merchant.		Government.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
August 15, 1900....	68	277,680	47	113,329	115	391,008
June 15, 1901....	89	355,645	71	281,148	160	636,793
July 1, 1902....	104	347,486	67	269,890	171	617,376
July 1, 1903....	88	255,675	47	334,147	135	589,822

To appreciate fully the existing conditions in the shipyards of the country equipped for steel construction the statement presented below should be examined in detail. It shows the ocean steel screw steamships, over 1000 tons, building on July 1, 1903, as compared with same date of 1902, giving points where building, class of trade, name or number and owner:

Sparrow's Point, Md.	Gross tonnage	
	Foreign (Transatlantic)	International Mercantile Marine Company
Total, July 1, 1903.....	7,914	7,914
Total, July 1, 1902.....	76,000	76,000

New London, Conn.:		
Foreign (Transpacific direct)—"Minnesota," Great Northern Steamship Company.....	21,000	
"Dakota," Great Northern Steamship Company.....	21,000	
Total, July 1, 1903.....	42,000	
Total, July 1, 1902.....	42,000	<hr/>
Camden, N. J.:		
Foreign (Transpacific, via Hawaii)—"Mongolia," Pacific Mail Steamship Company.....	13,500	
"Manchuria," Pacific Mail Steamship Company.....	13,500	
Total, July 1, 1903.....	27,500	
Total, July 1, 1902.....	11,276	<hr/>
Chester, Pa.:		
Coasting—"San Jacinto," New York & Texas Steamship Company.....	6,250	
No. 323, Blair & Co.	5,500	
No. 324, Blair & Co.	5,500	
Quincy, Mass.:		
Coasting—No. 114, New York, New Haven & Hartford Railroad.....	3,960	
No. 115, New York, New Haven & Hartford Railroad	3,960	
Wilmington, Del.:		
Coasting—"Calvin Austin," Eastern Steamship Company	3,826	
Camden, N. J.:		
Coasting—No. 20, Merchants' & Miners' Transportation Company.....	3,000	
Total, July 1, 1903.....	31,996	
Total, July 1, 1902.....	70,379	

Of the vessels included in the above table the "Missouri," "Minnesota," "Mongolia" and "Calvin Austin" have been launched, and, together with several of the coasting vessels mentioned, will probably be completed during the current fiscal year. It therefore appears that there will probably remain unfinished on July 1 next less than 50,000 tons of the merchant vessels listed above, a condition of affairs that will no doubt stimulate the movement now on foot looking to the passage of a shipping measure of some kind by the coming Congress.

W. L. C.

The Hisey-Wolf Portable Electrically Driven Drill.

The portable electrically driven drill here illustrated will take drills up to $\frac{1}{8}$ inch. It has a feed by the hand wheel of 7 inches and may be extended 20 inches in any direction, thus making it practically a universal radial. The machine has two speeds and current is obtained from



THE HISEY-WOLF PORTABLE ELECTRICALLY DRIVEN DRILL.

the ordinary incandescent lamp socket. The motors, built especially for this class of work by the manufacturers, the Hisey-Wolf Machine Company of Cincinnati, Ohio, are wound for either 110 or 220 volts. They are inclosed and dust proof and suitably geared to develop the necessary power up to the capacity of the drill. The drill weighs 95 pounds and is 30 inches high.

Vincennes, Ind., is experiencing a boom in new manufacturing establishments. The Blackford Glass Company will have their 30-pot factory ready for operation November 1, and the Empire Paper Company, who are

building one of the largest strawboard plants in Indiana, will have it ready for work about the same time. The Star Shovel & Range Company are making fast progress with their new plant. The Vincennes Bridge Company are preparing plans for doubling the size of their plant, and the National Rolling Mill Company have begun work on their new buildings. The Vincennes Furniture Company and the Vincennes Button Mfg. Company have just completed new plants and have them in operation.

The Chicago Sand Rammer.

The Chicago sand rammer, shown in the accompanying illustration, is a new device manufactured by the Chicago Pneumatic Tool Company. The two prominent



THE CHICAGO SAND RAMMER.

features which the manufacturers claim commend this tool to the trade are the light weight and the fact that the tool is designed to be used with the operator standing in an upright position. The piston, which has a stroke of 7 inches, is 1 1/16 inches in diameter. The tool consumes 30 cubic feet of free air at 80 pounds pressure, delivering 500 blows per minute. It weighs 17 pounds.

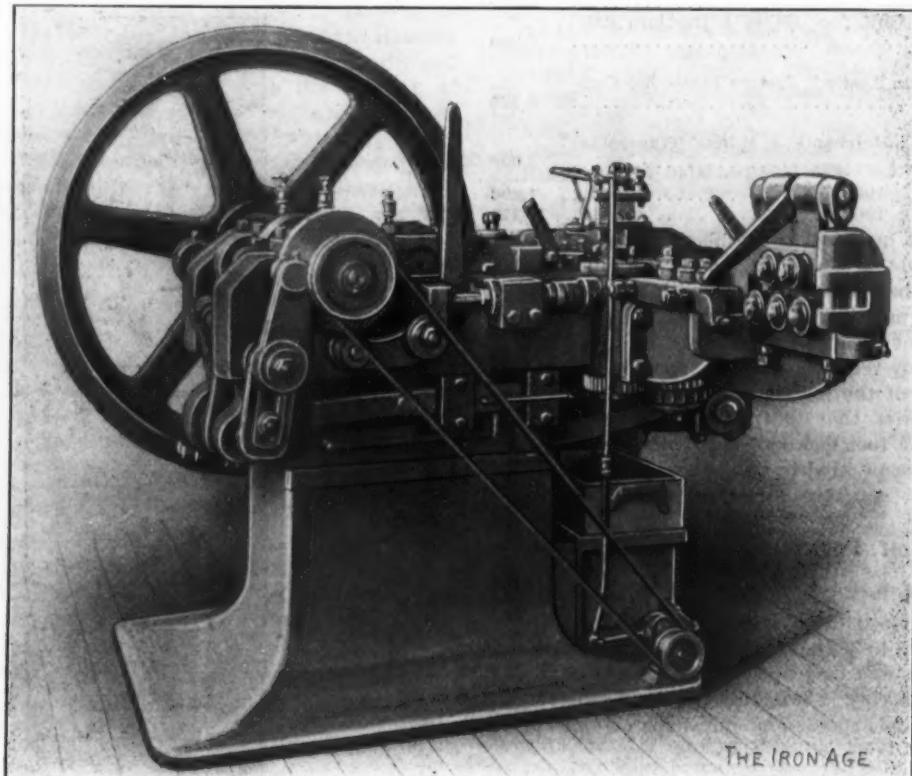
The Hydraulic Power & Mfg. Company, Niagara Falls.—Extensive improvements are being made to the power plant of the Niagara Falls Hydraulic Power & Mfg. Company, known as the Schoellkopf plant. The basin or reservoir of the present canal will be extended northward and a forebay built to convey the water to additional penstocks, now being constructed of steel, 11 feet in diameter and 210 feet in height, leading to the turbine wheels and generators underneath the bank. At this point, which is at the foot of the cliff, some distance below the Falls, a new power house is to be erected, supplementing the one now in operation, and the work of clearing the site is now in progress. The work of widening and deepening the hydraulic canal from Port Day (opposite the head of Goat Island) to the basin at the top of the cliff below the Falls is also going on daily. When completed this canal will be 100 feet wide its entire length, and from 14 to 18 feet deep, and will enable the company to produce 100,000 horse-power, the total present

capacity being 40,000 horse-power, of which 30,000 is electric and 10,000 water power. Actual work on the new power house itself will not be begun until next spring, but when finished it will have the most complete and approved generating equipment known to electrical science.

The Waterbury Farrel Nut and Threading Machines.

We here illustrate a line of nut and threading machines designed and built by the Waterbury Farrel Foundry & Machine Company of Waterbury, Conn. The nut machines are used for making square or hexagon nut blanks, pierced and chamfered ready for tapping. The work is done on cold stock, which is fed from either the coil or straight bar. If coiled stock is used, it is drawn

operations. The oil is returned to a tank included with the machine, and is used over and over again. The piercings and other scrap drop into a pan, which can be removed quickly and emptied when necessary. All the adjustments for the tools are readily accessible. In changing the machines for different sizes of nuts the die and punch block complete are shifted, making this a very simple and quick operation. The tools are simple, as will be seen when it is understood that after the piercing is done one punch does all the work necessary to finish the blank—that is, it cuts off, crowns, trims and ejects the blank, making unnecessary carrying fingers with their complicated motions. The small machines are made with knuckle joints, which give the gate two strokes for every revolution of the crank shaft. The two larger sizes are made with a large cam for actuating the gate, so shaped



Nut Machine.

THE WATERBURY FARREL NUT AND THREADING MACHINES.

through the two-way straightener; if straight stock is used the straightener is not required. This straightener has provision for separating the rolls quickly for introducing the stock. This separation is done by means of the handles shown by the straighteners. The cut off and piercing dies are carried in a die bed very much like a die bed on an ordinary press. This die bed can be taken off readily, thus allowing the chamfering and shearing dies to be easily inspected. In the old machines these dies were all more or less difficult to get at and care for. The nuts in the old machines drop down immediately back of the die slide into a blind passage, while now they come right through the end of the bed in a small trough and drop from there into a box in front of the machine, leaving nothing blind at all. The feed stop for determining the position of the end of the stock when it is fed into the machine for making the first nut is made so that it swings clear of everything when not in use, making a bolder and more lasting device than the old machine had.

The sequence of operations is as follows: The stock is fed automatically by a roll feed to a piercing punch, which makes a hole in it of a size suitable for tapping; another punch then cuts off the nut from the end of the stock, chamfers and reshears or trims it; it is then dropped into a box. An oil pump attached to and driven from the machine furnishes oil for flooding the tools during all the

as to give a slow speed to the punches while cutting off and piercing—a very desirable feature when handling thick stock—and quick action for other parts for the stroke. These machines are made in sizes for producing nuts $\frac{1}{2}$, 11-16 and $\frac{5}{8}$ inch across flats.

In the threading machines the blanks to be threaded are made in a previous operation. If screw blanks, the heads are made by upsetting the body of the stock, by either the cold or hot process. In heading machines it is customary to make blanks cold up to $\frac{5}{8}$ inch in diameter at the body. These cold machines are made by this company in sizes suitable for working wire of all sizes below and including $\frac{5}{8}$ inch in diameter, and of the usual lengths for screws or rivets of these diameters. In the process of rolling threads upon wire and screw blanks the blank is rolled between dies whose surfaces are grooved to suit the shape of thread and at an angle corresponding to the pitch of the screw. The stock is displaced during the operation but none of it removed, and the finished product is therefore larger in diameter than the blank by an amount equal to the depth of the thread. The machine generally used for doing this work is known as the reciprocating screw threading machine. It is arranged to hold one stationary die and one moving or reciprocating die; blanks introduced between these dies are rolled between their faces and perfect threads of uniform size rapidly formed. The automatic feed for the thread-

ers is used only with blanks which have a head, those without heads, such as stud bolts and special shapes, being fed by hand. It is also customary to feed by hand large bolts and small ones where the quantity is not sufficiently large to pay for setting up and adjusting the hopper. If fed by hand the blanks are introduced by the operator vertically into a guide on the feed table; a cam actuated carrier then automatically carries them to the dies, which roll the blanks between them, and automatically deliver them at the end of the machine, where they drop into a suitable receptacle. If the complete automatic feed is used the blanks are placed in the hopper by the operator and automatically delivered by it to the carrier slide, already mentioned in the description of the hand feed; from that point the operations are identical.

The hopper used is of the slide type, consisting of the slide, with an inclined track or guide on its top, and the

and will be raised to the top of the cascade by a pumping station located under Festival Hall. The pumping machinery will consist of three 36-inch single-stage turbine centrifugal pumps, purchased from Henry R Worthington of New York City, each driven by a 2000 horse-power Westinghouse alternating current motor. The total horse-power utilized will thus be 6000, making this the largest electric pumping station in the world. The pumps and other pieces of machinery for this plant are now being installed at St. Louis.

Strikes in the Shipbuilding Trade.

Over 50 years ago New York City was a great shipbuilding port, where clippers for the China trade were built in large numbers. Ship carpenters had high wages for that period, \$3 per day, and every one was prosperous; but in an evil hour some one suggested that they should be getting \$3.50 per day, and the whole body went on strike for it. The shipbuilders would not give in and closed their yards. As a consequence parties who

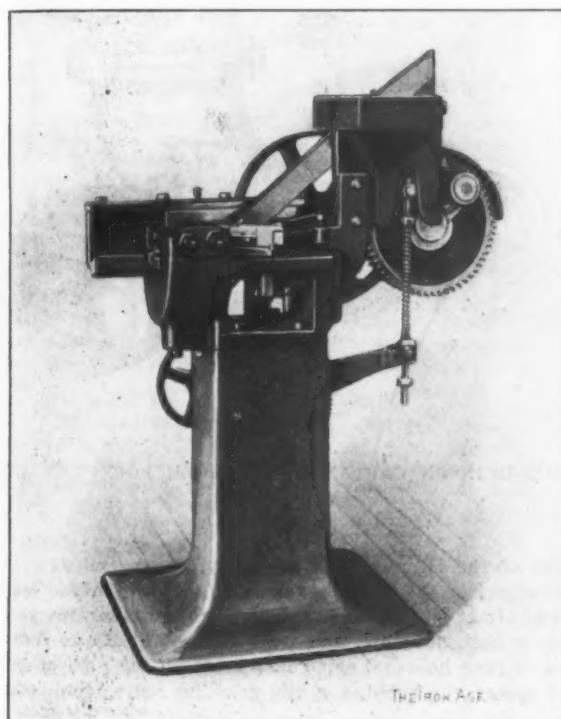


Fig. 2.

Threaders with Automatic Feed.

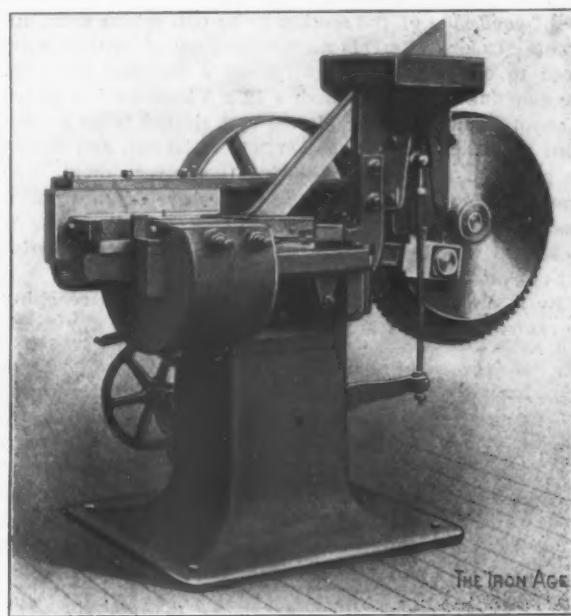


Fig. 3.

THE WATERBURY FARREL NUT AND THREADING MACHINES.

pan into which the blanks are placed. The slide moves up and down through the blanks, picking up several at each stroke. When it reaches its highest position it dwells for a brief period to allow the blanks to slide from it to the chute leading to the carrier. The chute besides carrying the blanks acts as a sort of reservoir, keeping a supply of blanks ahead, in sufficient quantity to run a short time in case by any accident the hopper gets clogged. One operator would have charge of several machines, and would be engaged in supplying the blanks, getting rid of the finished product and seeing that the chutes were not clogged, or that the hopper did not get out of order for any length of time. Five standard sizes of these machines are built from new designs.

An Artificial Niagara at St. Louis.

An immense artificial cascade has been determined upon by the authorities of the St. Louis Universal Exposition as the center piece of the semicircular lay out of the principal buildings. The cascade itself will be divided into three parts—a large middle cascade, with a smaller one at each side, the water flowing directly into the head of the Grand Basin. In all, about 90,000 gallons of water per minute will be supplied at a head of 159 feet, forming the greatest artificial water effect ever attempted.

The water will be taken from the Grand Basin itself,

wanted vessels built went to Maine and Massachusetts for them, and the shipbuilding trade, so far as New York was concerned, was doomed from that time. Precisely the same state of affairs exists now. The steel shipbuilders in this vicinity have been so harassed by disorganized labor that some of them have suspended operations, for the present at least, with a very poor outlook for resumption at any time. Some shipyards have had a particularly serious time. One of them has been idle for many weeks, owing in great part to the exactions of workmen in all branches of the trade. As soon as the demands of one class were settled another broke ranks and went out. The works are now completely idle.

The worst feature of this folly upon the part of the strikers is that it has affected all persons connected with building a ship, for one and all have been drawn into it against their will and convictions. They had no quarrel with the management and no cause for striking, but the unions held them all up. Here is a large business disorganized and paralyzed by the wanton action of a few wholly irresponsible men. Action is needed tending to make such occurrences impossible.

The World's Maritime Statistics.—Lloyd's Register for 1903-1904 puts the world's mercantile marine on July 10, 1903, at 29,943 steamships of 27,183,365 tons and 12-

182 sailing vessels of 6,459,766 tons. The principal nations are represented in the following table:

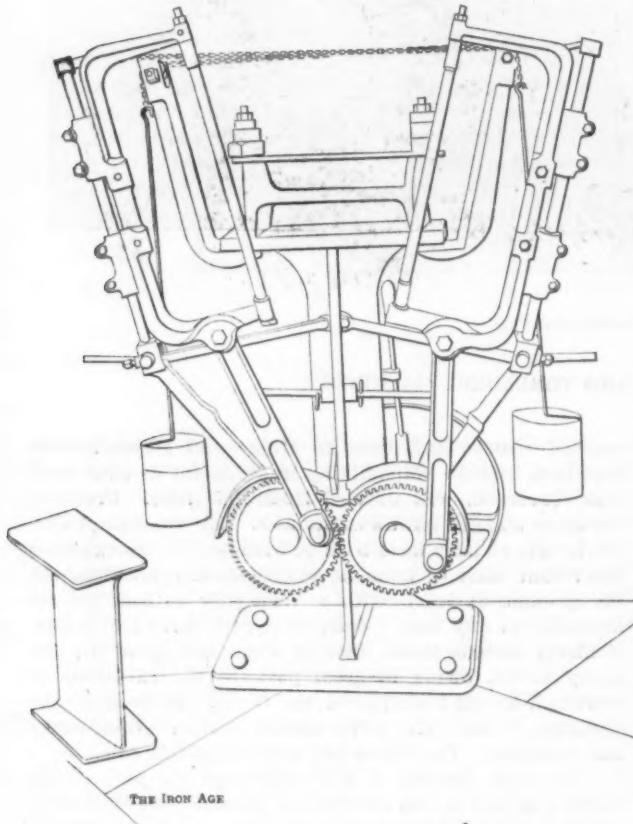
Country.	Tonnage.	Country.	Tonnage.
England	16,006,374	Holland	658,845
United States	3,611,956	Denmark	581,247
Germany	3,283,247	Austria-Hungary	578,697
Norway	1,653,740	Greece	378,199
France	1,622,016	Belgium	157,047
Italy	1,180,335	Brazil	155,086
Russia	809,648	Turkey	154,494
Spain	764,447	Chile	103,758
Japan	726,818	Portugal	101,304
Sweden	721,116	Argentine Republic	95,780

The tonnage of the United States is largely confined to vessels in the coasting, lake and river service.

An English Double Bladed Power Hack Saw.

From *Engineering* we take the following description of an improved form of hack saw for cutting rolled iron and steel joists and other forms of constructional steel. It will also cut the webs out of crankshafts. It possesses some novel features, and its design is very simple. It will be seen from the drawing that there are two saws, one at each side of the section to be cut, which work alternate strokes. By this means the time of cutting is reduced to one-half that required by a one-saw machine. The machine will cut through a 12 x 5 inch section girder in about 20 minutes. A planed and slotted table is provided on which to place the article to be cut, and means are provided for securely bolting the latter down. The arms or bows which carry the blades are of substantial construction, so that true cutting may be relied on. It is claimed that in cutting a 12 x 5 inch girder the blades will not deviate 1-32 inch.

By a simple attachment one of the bows on reaching the center of the cut is pushed back sufficiently far to al-



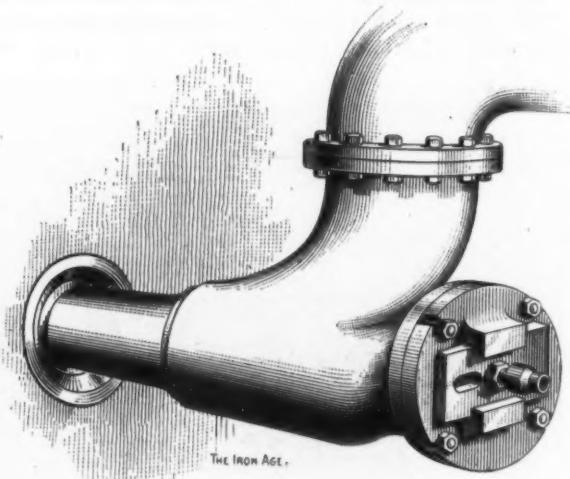
AN ENGLISH DOUBLE BLADED POWER HACK SAW.

low the other bow to come through and complete the cut. The feed is effected, as will be seen on reference to the illustration, by means of two chains and weights, each bow being drawn forward independently by a chain and adjustable weights. In this way the feed can be suited to the keenness of the blade and the nature of the material to be sawn. The chains can be unhooked and the bows thrown back to put in or remove the work. The bows are

held back in any position by means of catches on the rods, seen sticking out horizontally at the right and left of the machine just above the weights. The makers of the machines are Beanland, Perkin & Co., School Close Works, Leeds.

The Johnson Cap and Peep Hole for Furnace Tuyeres.

The accompanying illustration shows an improved cap and peep hole for blast furnace tuyeres, invented and patented by Guy R. Johnson, superintendent of blast fur-



THE JOHNSON CAP AND PEEP HOLE FOR FURNACE TUYERES.

naces of the Illinois Steel Company, South Chicago, Ill. The object of the invention is to do away with the leakage of air at peep holes so common around blast furnaces. This is both annoying and wasteful. With the ordinary type of peep hole and cap, constructed on the plan of ball and socket, the rubbing of the pricking rod in the socket wears the joint, and as soon as a small leak is started the action of the hot air, laden with more or less flue dust, enlarges it until it is necessary to change the cap. This is a source of considerable expense and annoyance.

In this arrangement the cap is made very heavy and has a projecting boss which fits loosely into the tuyere stock, making a loose fitting male and female joint. The sliding peep hole carrier is made wedge shaped and works in the slides, as shown. These slides, and also a boss, which lies directly underneath the eye sight carrier and around the hole in the cap, are finished; by finishing is meant a scraped joint. In operation, after the cap is in place, the wedge shaped carrier is driven up tightly so that the peep hole is in direct line with the center of the blow pipe. If it is necessary to poke out the tuyere the carrier is driven outward until the slot shown in the carrier is opposite the hole in the center of the cap. It can be readily seen that all the wearing surfaces are free from exposure to the rubbing of the pricking rod, and if the carrier is driven up tightly the fit is so perfect that no leakage can ensue. The efficiency of this cap and peep hole is demonstrated by the fact that some have been in service at Joliet for a year and are as good as the day they were put on.

Labor troubles in Chicago have influenced the Allis-Chalmers Company to move their purchasing and traffic departments to their new works at West Allis, near Milwaukee. In a statement, W. J. Chalmers said: "We are compelled to make the change on account of labor troubles here in Chicago. It is impossible for us to secure protection, and there is no other alternative but to go elsewhere. During the recent strike, which lasted for 13 months and cost us \$350,000, we were unable to get police protection, and consequently we lost heavily."

Interpretation of the Amalgamated Scale.

Decisions of the vice-presidents of the Amalgamated Association on certain parts of the wage scale, which have heretofore been interpreted differently by companies signing the scale, are now being compiled and will soon be sent out. Among the most prominent decisions arrived at at the recent meeting of the vice-presidents held in Cleveland, Ohio, are the following:

Sheet Mill.—Clause 5 applies where the company demands the changing of iron or steel for the purpose of securing a better sheet, and increasing the work of the men.

Day Hand Scale.—Double in pairs.—The rule is to divide 90 pairs by 7 heats; answer, 12 6-7 pairs, which is a heat; 9 heats, 115 5-7 pairs. If you make seven heats double in pairs, you can make two full heats of a regular order.

Tin Scale.—Clause 1 applies where the company demands the changing of iron or steel for the purpose of securing a better sheet, and increasing the work of the men.

Limit to Output.—Clause 1, in sizes 20-inch, containing an area of 1148 inches or more, 10 per cent. may be made, but on sizes less than 20 inches wide, regardless of length, the percentage cannot be made. In sizes 26 inches wide, 15 per cent. may be made.

Bar and 12-inch.—Clause 17. That present custom and ruling prevail.

Guide and Hoop Scale.—Clause 7 means that the amounts stipulated are for determining what shall constitute a two, three or four men's job, in order to determine what fractional part of the total wages shall be paid by the roller. One extra man in excess of two, three or four, as the case may be, must be employed to make clause operative, but any number of men in excess of one who may be employed on roughing rolls shall in no way alter the provision of such clause.

Memorandum of Agreement.—Clause 5 means that no guide, hoop, bar, sheet, tin or any other finishing mill shall start earlier than 5 a.m. Monday and finish with first on Saturday.

Boiling Scale.—Clause 12. Question arose whether it meant to cover sand or other substitute fix. It was understood not to be the case.

Clause 20.—It was agreed to use every effort to enforce this.

Muck or Puddle Mill.—Clause 5 means that the forker be classed as a dragout.

Busheling on Sand Bottom.—Clause 6. If they were working bundles, 50 pounds each, they could not work two, but must confine their weight to 80 pounds.

"Back Charging" Not an Invention.

In the United States Circuit Court at Pittsburgh, on September 21, an opinion was handed down on a bill in equity filed in the November term, 1899, by the National Tube Company against Spang, Chalfant & Co. for infringement of a patent by Peter Patterson on a method of "back charging" a furnace for heating iron to make butt weld pipe. In his opinion, Judge Buffington says:

"A vast amount of testimony has been taken to show the nature of the back charging practice and its advantages over former methods. We so regard it. It is a natural, continuous, straight away method, and, like all such improved methods of handling, it avoids congestion of workmen; allows steady, as compared with intermittent, work; it utilizes the same heat and labor to produce a larger product. We are also satisfied that by a quiescent charging better heat results are obtained and less scraps made. We are also satisfied that the practice has developed advantages additional to the two which alone the patentee had in mind, and referred to in the application—viz., even longitudinal heating and separation of the working force. But conceding such difference and progress, the fact still remains that the step here made was one of gradual, and to be expected, progress, which marks every great and therefore progressive industry."

The opinion declares that the principle of back charging was not Patterson's invention, nor was quiescent heating; he simply utilized these principles. "It is not everything that is novel and exceedingly valuable," the Court says, "that is patentable." Again, he says: "Each forward step prepares the way for another, and to burden a great industry with a monopoly for each improvement for any step thus made, except when marked by an advance greater than mere progressive skill, is hostile to progress."

In conclusion, the Court says: "While the testimony of the experts in this case shows the thermal and operative advantages of back charging, a conclusion to which we agree, and while the process is simple, effective and economical, we are nevertheless satisfied it involved no invention. In our judgment, it was but the

steady evolution and development of advance incident to an industry where competition pushes progress to constant change. In this advance the movable table and the successive tongs were material factors. Back charging was the natural step in advance—when these factors were provided. So holding, we are of the opinion that the patent is invalid, and the bill must be dismissed."

Lake Labor Troubles Settled.

CLEVELAND, OHIO, September 29, 1903.—The labor difficulty of the lakes disappeared as suddenly as it began. When the officers of the Pittsburgh Steamship Company, against whom the wrath of the American Association of Masters and Pilots was directed, announced that their barges would be handled by other steamers, the masters of the boats of other fleets refused to tow them. This brought matters to a focus quickly. The vesselmen held a meeting, in which it was decided that if the masters of vessels not owned by the Pittsburgh Steamship Company refused to tow the barges of that fleet, the whole lake-situation would be tied up and a fight would begin to exterminate the unions, if possible. This promised such a serious curtailment of the ore movement down the lakes that caution was pleaded. The vesselmen were obstinate, and it seemed that serious difficulty was ahead. The union sent a committee to the officers of the association for a consultation, but it was turned away without satisfaction or without even getting an audience. This widened the breach. When it seemed that a prolonged struggle was likely, one of the biggest vessel owners took a contract to deliver a large amount of coal from Buffalo to the upper lake ports, thus signifying his intention to run his boats the season out, regardless of the vesselmen's compact. This action was taken the day after the agreement was entered. The news of it spread and other vesselmen followed. Hearing that some vessels were still to be in operation, the officers of the Pittsburgh Steamship Company went to some of these owners and asked for tonnage to move ore. The reply was that the rate from now on is \$1 a ton, against 80 cents which had applied theretofore. The Steel Corporation were then compelled either to yield to the vessel interests or the unions, and the latter was less expensive. That course was decided upon, and the objectionable nonunion crew was dismissed and union men put in their places. As a result the first of this week saw all of the boats on the lakes again in operation. The movement of ore will likely be as heavy as at first intended, or about 27,500,000 tons for the year.

National Rolling Mill Company's Vincennes Plant.

The National Rolling Mill Company of Hartford City, Ind., are building a new plant at Vincennes, in the same State, which will have twice the capacity of the Hartford City mill. The main building will be 70 x 450 feet; the building for the 8-inch mill, 70 x 200 feet; the blacksmith and machine shop, 40 x 60 feet; the boiler room, 40 x 60 feet, and the warehouse, 36 x 100 feet. The foundations of the buildings are about completed. The new plant is located on the Wabash River, from which it will be directly supplied with water. The works will be equipped with ten scrap furnaces, two puddling furnaces and one 8 and one 10 inch mill. All the machinery now in use at Hartford City will be removed to Vincennes. Orders for additional machinery, including the 8-inch mill, have already been placed. The 10-inch mill will be driven by a 26 x 30 and the 8-inch by a 24 x 30 Atlas engine. Power will be supplied from a battery of five boilers of 150 horse-power each, and in addition two 150 horse-power Cahall waste heat boilers will be installed in the 10-inch mill over the heating furnace. The muck mill will be driven by a new 28 x 60 Atlas Corliss engine, and two stands of 18-inch rolls will be installed in this department. It is expected that the muck mill will be in operation by December 1 and the 10-inch mill by January 1, and from 30 to 60 days later the 8-inch mill will be in operation. With the new equipment the mill will manufacture rounds and squares from 3-16 to 2 inches and flats from $\frac{3}{4} \times \frac{1}{4}$ to $4 \times 1\frac{1}{4}$ inches.

The Iron Age

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The Legal Status of the Boycott.

We have examined with some care, and with such limited intelligence as the layman may claim in matters lying wholly within the arcanum of the law, the full text of the bills of complaint in two suits brought by D. E. Loewe & Co. of Danbury, Conn., through the American Anti-Boycott Association, of which that firm are members, against several hundreds of persons named as defendants, whose property, so far as they have any which is accessible, has been attached by order of the United States District Court for the District of Connecticut, to secure the claim of the plaintiffs for damages in the amount of \$240,000. Suit is also brought against the same defendants in the Superior Court for Fairfield County, accompanied by an order attaching the property of the defendants in a claim for damages to the amount of \$100,000.

The facts as set forth in the complaints, and as generally known to those who have followed the current labor controversies, are briefly as follows: The plaintiffs are a firm of hat manufacturers doing business in Danbury, Conn. For reasons of their own they saw fit to maintain their hat shop on a nonunion basis, or, as the complaint states in the euphemistic language of the law, "to conduct their business on the broad and patriotic principle of not discriminating against any person seeking employment because of his being or not being a member of any labor or other organization." Their trade was large and extended into nearly all the States and Territories of the Union. Indeed, all of a trade of over \$400,000 per annum, except sales to the amount of some \$10,000, in Connecticut, was strictly interstate commerce. By reason of their attitude in refusing to unionize their shop and thus surrender control of their own business, D. E. Loewe & Co. became the objects of somewhat insistent attentions from the United Hatters of North America. Not being able to accomplish the unionization of the shop, this society had recourse to the expedient of a boycott to accomplish its purpose. One was accordingly proclaimed, and notice of it was published in a newspaper maintained for this and kindred purposes by the union. At this point the matter was taken up by the American Federation of Labor, which also maintains a boycott bulletin in the shape of a magazine, and the boycott started by the local unions of the United Hatters of North America was by this agency nationalized. In July last the boycott was put on all over the United States, as far as the United Hatters and the American Federation of Labor could make it effective. The agencies employed were those usual in such cases. Every dealer was notified that the products of the boycotted firm were under the ban of labor's major excommunication, and that whoever should deal in them would lose his trade. Shipments were followed by messages to local unions to look out for them, and firms or individuals to whom they were sent were terrorized by every means which ingenuity could suggest. It is not necessary to

follow the methods of the boycott in detail. It is the same old story, which has been told so often and which puts organized labor in so desperate a light before right minded and thinking men. The acts complained of are alleged to be in open and flagrant violation of the act of Congress, approved July 2, 1890, entitled "An act to protect trade and commerce against unlawful restraints and monopolies."

These are suits which are of sufficient importance to warrant a protest on the part of all public spirited citizens against failure for any reason to prosecute them to final judgment. They involve a principle of too much consequence to justify any evasion on the part of organized labor of the issue as drawn. It is easy to understand why organized labor should want to evade such an issue, since an adverse decision would in large degree cripple its power for the kind of mischief accomplished through the central bodies, which are largely agencies for the working of the boycott on a national scale. From the viewpoint of the American Anti-Boycott Association, however, the case is different. We presume that the plaintiffs in whose name this suit is brought will have no great difficulty in establishing the fact of substantial financial damage through loss of trade, and the documentary evidence in possession of their counsel will show very clearly the extent and ramification of the conspiracy in restraint of trade established and maintained by the American Federation of Labor and the United Hatters of North America. We have here a set of facts essentially similar to those established in the Taff Vale and other important recent English cases, and it is of the greatest importance to organized labor, as well as to those whose capital is invested in plant, machinery and the details of a commercial organization, to know whether the principles of common law on which the English cases were decided obtain in American jurisprudence, and whether organized labor is exempt from the operations of the act of Congress under which these suits are brought.

It goes without saying that should a trade organization among manufacturers and merchants have recourse in carrying out a policy of mutual protection and advantage to practices as dangerous, and to the same extent invasive of individual rights, as that which labor has adopted to force into acceptance of union control employers who find the plan of the open shop more to their interest, or more in accordance with their views of right and justice, their liability in compensatory damages to those injured would not be open to question for a moment. Again, if an employers' association should adopt a policy toward recalcitrant labor at all comparable to the systematic boycott, and labor could show damage therefrom in lack of employment or loss of wages, an appeal to the courts would be followed by the prompt granting of the relief asked for. It may be that there is one code of laws for the ordinary citizen, and another for the wage earner and those he has chosen to represent him. If so, the fact is one of great public importance, and should be established by judicial decision at the earliest possible moment. On the other hand, if the rights, duties and obligations of the wage earner as a citizen under Federal and State laws are identical with those of persons on a different plane of industrial and commercial activity, a knowledge of this fact on the unquestionable authority of a final decision would tend to restrain labor from the commission of acts and the following of a policy which will bring it into conflict with the powers of the Federal and State courts. It may be said, however, without exaggeration, that such a condition of affairs is wholly inconsistent with the maintenance of the institutions of

civilized government. That way lies anarchy, and behind anarchy looms revolution. For these reasons we hope that the Danbury suits will be pressed to trial regardless of any schemes of compromise which organized labor may offer. There is a principle involved in them, and to establish it is of more importance than to gain any momentary advantage which may come from a concession from the United Hatters.

Meanwhile, the trend of thought in labor circles is not all in one direction, nor is the tendency of development in its policy wholly dangerous. Flashes of light are beginning to penetrate its dark places, and the more intelligent of those chosen to national offices of responsibility are making the important discovery that it is by no means to the interest of labor to press for every advantage in sight nor to antagonize a sound and conservative public opinion. The general secretary of a large and important trade union, who has served it for twelve years as a national officer and is well known and much respected, lately published in the official journal of his union a "warning," from which the following very conservative and sensible generalizations may be quoted:

Popularity is often obtained by pandering to the conceits of many, but the leader who depends upon this means for favor does not survive the first defeat due to his unwillingness to admonish his people. I want to say frankly that the danger that menaces the organization comes from within, not from without: that its apparent strength is often its greatest weakness. We have shown again and again our ability to meet the united opposition of the employers. We have passed through depressions. We have survived internal strife, but no union can endure that fails to perceive its limitations or appreciate its real function. The great problem of the movement is the exercise of self restraint by the members, to use the vast power acquired with moderation and with due regard to the welfare of society. If every member is made to believe that it is simply necessary to make a demand in order to get what he wants, if he is made to feel that the trade is capable of granting anything, that it is simply a matter of power, the time of reckoning is not far off. If history has shown anything it is that sudden changes bring about reactions, and it is peculiarly so with economic conditions. Time must be given for industry to adjust itself to the changing conditions due to the upward pressure of the workers.

This is what may be characterized as "straight talk." From an employer, or from a representative of what labor is pleased to call the "capitalistic press," it would probably carry very little weight; from an experienced and trusted labor representative whose loyalty to the cause with which he is identified is not open to question it is extremely significant. This is also true of the fact that it is published in a trade union organ, which, if it ever was a boycott bulletin, would appear to be so no longer.

There is a very slight basis of truth, if any, in the assumption that the representative employer is hostile to the principle of organization among wage earners. When a union establishes itself in the respect of those with whom it has relations, the average employer is usually very glad to recognize it and very willing to treat with it. That which is resented and resisted is the blind and arbitrary exercise of power for no good ends, and chiefly to dragoon into line those who see no advantage in affiliation; and especially when the unions, without knowledge of or interest in local issues, make themselves the agents of national boycotts, thus laboring to create conditions destructive of national prosperity. Under these conditions it is not surprising that the instinct of self preservation often leads employers to make great sacrifices to assist in destroying unions which menace alike the interests of wage earners and wage payers. For such excesses the membership of the unions is but little to blame. The responsibility rests with the leaders, and that so few of this class are fit for the responsibilities they so readily assume and with which they are so recklessly intrusted is less an occasion for surprise than for regret.

Speculation Perverting Trade Currents.

It may be that the distrust of business affairs which has seized Wall Street operators in securities has some foundation in fact. Among the chief causes that have brought the present day of retribution on the Stock Exchange is the financial management or mismanagement of various industrial enterprises, and now the good suffer with the bad. For five or six years there has been a disposition to experiment with industrial companies similar to that which was indulged in during the early period of rapid railroad extension, when overcapitalization sowed the seed for receiverships and left a heritage of barren or nondividend paying securities. On the other hand, there is always a tendency for speculation to run to extremes, and as action and reaction are equal and opposite, the present depression of stock values seems unwarranted. The unprecedented prosperity of the entire country for several years has kept the errors of financial managements in the shade, and permitted excesses in speculation which would not be countenanced during times of normal business activity.

Aside from this phase of the situation there is little to encourage pessimistic beliefs, although it is probably true that in some important lines the upward tendency of prices has induced overpurchasing, which in turn has stimulated manufacture beyond the average requirements of the people. There is little room to believe, however, that this tendency has been carried to a degree in any way dangerous, and to some extent it has already been corrected by a wholesome conservatism, which will prevent a continuance of such a course and will contribute to a healthful future, although with a probable decrease in the volume of credit transactions.

Turning to the condition of the railroads, and to the consideration of the great produce crops upon which all our prosperity is founded, we find some features worthy of favorable comment. For many weeks unbridled speculation in the grain pits could, or would, see nothing but disaster to the great produce crops, being blinded by greed, which sees nothing but the intense present. The result was the pushing of prices of wheat and corn to a point where shipments were checked and exports the smallest in six years. A lesson has been learned through the sobering influence of failure, resulting in a decline of from 7 to 10 cents per bushel in wheat during the last week or ten days, but there seems room for even lower prices. Exporting countries other than the United States have been shipping wheat so freely that importing countries have been independent of this country. But the immense exports of wheat from Southwestern Europe will naturally fall off with the closing of inland navigation as winter advances, and the shipments from India will decrease with the new crop year, which begins next March, while Argentina will not be an important exporter until February, and Australasia will make few shipments before that time. During the last three weeks the shipments from Russia and the Danubian States have averaged over 6,000,000 bushels per week, which if continued from October 1 to January 1 would give those countries a much larger share in the exports than ever before. This increased European movement, too, has been made possible by the untenable position of speculators in this country. We are now assured of a crop of about 650,000,000 bushels of wheat, including winter and spring, and although the condition of the crop is less favorable than three or four weeks ago—as considerable of the spring wheat has been damaged in harvesting—lower prices have been accepted. This is a necessary step in the right direction, as normal conditions can be

resumed only by an increase in our exports. Western primary receipts are increasing, however, and with shippers more reasonable in regard to price we may now anticipate the drawing of orders from abroad.

The condition of corn, too, is more reassuring, with increased primary receipts, favorable weather and the crop beyond the danger point of frost, insuring a yield of at least 2,200,000,000 bushels. Since July 1 Western primary markets have received about twice as much corn as during the corresponding time a year ago, and the visible supply is now 8,000,000 bushels larger than last year, contrary to the usual course, the movement increasing toward the end of the crop year, resulting from the marketing of old corn, which was long held at high prices. It is reported, too, that less corn is likely to be fed this year, giving a larger quantity for the general market.

This increased marketing of produce will contribute considerably to the maintenance of large gross earnings by the railroads. About 33 transportation companies have made returns for the second and third weeks of September and, with the exception of four, all have shown a continuance of growth in gross receipts. It is yet too early, however, for detailed returns, but for the month of August the same features which marked the returns of the first six months of the year were prominent. The *Financial Chronicle* has made tabulations covering the month of August of reports from 76 roads, covering over 98,000 miles. These returns show an increase in gross earnings over August of last year of over \$6,000,000, or 9.18 per cent., but the increase in operating expenses has continued in about the same proportion. It is significant, however, that railroad earnings in August increased in the face of a smaller cotton movement in the South and a light movement of grain in the West. But earnings in August, 1902, were diminished by the coal miners' strikes, both in the anthracite and bituminous fields. The loss in earnings to the railroads in moving some 15,000,000 bushels of wheat and oats less in August, 1903, as compared with the corresponding month of the preceding year, will doubtless be fully recovered in September and October. The corn carried, of course, showed a considerable increase in August this year, as the movement during the preceding year was abnormally small. The marketing of cotton in August is usually small, but this year the marketing was exceptionally light, there being received at the Southern outports less than 6000 bales, as compared with nearly 137,000 bales in August, 1902.

It seems clear that if the speculative propensity of the average trader can be kept within moderate bounds during the next few months, business will resume its natural channels—one of the greatest benefits possible for the general community.

The Outlook for the College Man.

Never before in the history of the world has it been so easy for the ambitious youth to obtain a college degree. The public schools provide all the preliminary training required for admission, and this without expense to the scholar. Once having passed his entrance examinations the road is assured, provided he has the necessary grit and self-reliance, and is free from the germ of laziness. In these days the man working his way through college is respected by faculty and student corps; he pays his way by the sweat of his own brow, and his independence is admired even by those who do not have to follow a like course. He chooses his profession, plods along, receives his degree, and enters the world to fight his battle and either to succeed, fail, or

stand still as a nonentity. Now the question is this: Does the college graduate have a better chance than the man who never saw such an institution? From a strictly utilitarian point of view is the equipment he has acquired worth the candle, and will it enable him to reach his goal more quickly?

Inferentially, this might be answered affirmatively by mere reference to the fact that colleges are springing up all over the land, and yet the patronage these new institutions receive has no effect upon the older ones. From this it is certain that the demand exists for the so-called "higher education." Vast sums are necessary to keep all the colleges running, but endowments are frequent and liberal, so that we rarely hear of a college being compelled to close its doors because of lack of funds. In this way the demand is met. Those who give for this purpose certainly believe in the advantages of an education.

There is another and far stronger argument in favor of a college course. All of our great corporations and manufacturing concerns seek the college man, but in no sense do they seek him because of his familiarity with their business or with any detail of their transactions; neither do they want him for the smattering of knowledge he may be able to devote to their interests. They take him solely for the training he has gone through, and not for the wisdom that may be stitched in the lining of his cap. That training the man of affairs can further develop along lines which will be useful to him. The "having learned how to learn" is of vastly more importance in actual operations than all the learning absorbed in any course of four years.

Considered in the aggregate the demand appears to be about equally divided between the classical and the technical graduate. Concerns engaged wholly in manufacturing prefer a man who has been trained along lines fitting their own processes, but there are others of equal importance and magnitude who find room for a classical training. The Pennsylvania Railroad Company, with the vast diversity of their transactions, can always find a niche in which to place a college man, no matter what course he may have pursued. If he shows ability in any direction whatever, there is an opening, and it is never the case of a round plug in a square hole. The General Electric Company now have at their works nearly 150 young men who graduated from technical schools last June. These men are really serving a probationary period to test their qualifications and their practicability as builders or handlers of electric apparatus. They are passing through a preparatory course, or advanced system of apprenticeship, to find what branch of the business they are best qualified for. In all cases of this kind the rapidity of advancement depends entirely upon the industry and ability of the worker. All companies are willing, and in fact eager, to push a man forward just as quickly as he can go, but, on the contrary, they have no use for a man who promptly settles down to one job and evinces no ambition. There is no philanthropy in this; it is a clear cut business proposition by the company to obtain the best help possible. A man who masters one task is expected to kick, and it is hoped that he will kick, for something else in order that he may learn more.

Some years ago the graduate was not paid enough to enable him to live comfortably. To meet his necessary expenses he had to have outside resources. He was treated as a regular apprentice and was paid a boy's wages. Managers found that this policy worked to their disadvantage by depriving them in many cases of the services of bright men who could not depend upon outside assistance. This has been changed, and the college

apprentice is now paid wages sufficient to permit him to live decently by his own exertions. The manager displayed no charity by this action. He saw how his business was handicapped by the old method and changed it for his own benefit only. Incidentally he helped the graduate, but the idea of assisting the graduate did not influence him in the least to alter his plans. It gave him the best talent the college world had to offer, and presented an equal opportunity to rich and poor.

Records prove that in producing establishments the college man at thirty is far in advance of the man of the same age who entered by the apprentice door. The graduate may have been twenty-five before he donned a jumper, but in five years he learned more with the college training he had as a foundation than the regular journeyman in 15 years of actual work in the shop. His reward is apparent in the greater responsibility of the position he occupies and in the greater wages he receives. Even at thirty it is shown that the four years spent at college were not wasted, and that he really acquired the ability to learn how to do things.

CORRESPONDENCE.

Wrought Pipe.

To the Editor: The interesting paper under title of "Wrought Pipe," by Franklin Riffle, in your issue of September 10, 1903, although an able apology for one of the shortcomings of soft steel, is somewhat misleading, and one that should not pass unnoticed. Fundamentally, iron crystallizes in a bath of cinder—silicate of protoxide of iron—at a relatively low temperature, due to the increased infusibility of the iron as the carbon is eliminated. Each grain then is surrounded by an envelope of cinder. We will omit the various uses of such envelope, other than the one at issue. When taken from the furnace it is first squeezed, when the bulk of the excess cinder is taken out, the form of crystal or grain changed but little; the next operation, rolling, takes the balance of excess, and elongates the crystals into fibers; the cinder still remaining forming a matrix in which a series of iron fibers exist and appear much as a rope's end. The cinder present varies from 0.25 to 0.75 of 1 per cent. of the whole in finished iron.

It is then noticed that the cinder forms only a small part of the whole; that when rolled down it is necessarily much attenuated, and that when attenuated it becomes elastic, much as glass does—incidentally, it should be said that when much reduced glass is the most truly elastic substance known. Now, the reason iron resists oxidation efficiently is that on the exposure of the iron fibers they oxidize with relative rapidity, probably as freely as steel; when the exposed fibers are gone a finely corrugated surface of very thin cinder is exposed. Cinder, silicate of protoxide of iron, possessing stable chemical properties, resists the chemical action of the atmosphere, but will ultimately be removed by mechanical action resulting from expansion and contraction and vibration. But, as explained, this cinder is elastic, hence resists for considerable and varying periods of time, until, when removed, another series of fibers are oxidized, then a layer of cinder cracked off, and so on.

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Further, not only has puddled iron effective means for protection within itself, but the finished surface of iron is relatively rough—very finely so, however—as the surface of any material composed of two differing substances must necessarily be, and forms a more lasting bond with any exterior protecting agent, be it paint, tin or other substance.

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terior protecting agent, and demands the elaborate means so ably described in the paper in question.

As regards Professor Howe's tests, they represent one phase of the question of oxidation—viz., total loss of weight—but ignore the more vital one of the character of oxidation. In fact, like all laboratory tests, they should be taken in conjunction with every day working conditions to be other than misleading.

Iron oxidizes with relative uniformity over the whole surface and in the manner described; whereas, steel tends to pit, thus destroying the whole piece by a local weakness, and not necessarily losing more weight than iron would lose under the same conditions. This tendency to pit is inherent to steel, hence the utter improbability of overcoming it.

JAS. P. ROE.

POTTSSTOWN, PA., September 28, 1903.

The Consolidated Lake Superior Company.

The affairs of the Consolidated Lake Superior Company have not yet been satisfactorily adjusted. Announcement is made that Speyer & Co., who had advertised the sale of the securities held by them on October 1, will postpone the sale until October 8. The Speyer syndicate loan to be satisfied amounts to \$5,050,000. There are prior liens amounting to \$4,500,000. Following is the catalogue of stocks offered for sale:

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H. M. Burgan has been appointed purchasing agent of the West Virginia Central & Pittsburgh Railway Company, with office at Hillen Station, Baltimore, Md.

resumed only by an increase in our exports. Western primary receipts are increasing, however, and with shippers more reasonable in regard to price we may now anticipate the drawing of orders from abroad.

The condition of corn, too, is more reassuring, with increased primary receipts, favorable weather and the crop beyond the danger point of frost, insuring a yield of at least 2,200,000,000 bushels. Since July 1 Western primary markets have received about twice as much corn as during the corresponding time a year ago, and the visible supply is now 8,000,000 bushels larger than last year, contrary to the usual course, the movement increasing toward the end of the crop year, resulting from the marketing of old corn, which was long held at high prices. It is reported, too, that less corn is likely to be fed this year, giving a larger quantity for the general market.

This increased marketing of produce will contribute considerably to the maintenance of large gross earnings by the railroads. About 33 transportation companies have made returns for the second and third weeks of September and, with the exception of four, all have shown a continuance of growth in gross receipts. It is yet too early, however, for detailed returns, but for the month of August the same features which marked the returns of the first six months of the year were prominent. The *Financial Chronicle* has made tabulations covering the month of August of reports from 76 roads, covering over 98,000 miles. These returns show an increase in gross earnings over August of last year of over \$6,000,000, or 9.18 per cent., but the increase in operating expenses has continued in about the same proportion. It is significant, however, that railroad earnings in August increased in the face of a smaller cotton movement in the South and a light movement of grain in the West. But earnings in August, 1902, were diminished by the coal miners' strikes, both in the anthracite and bituminous fields. The loss in earnings to the railroads in moving some 15,000,000 bushels of wheat and oats less in August, 1903, as compared with the corresponding month of the preceding year, will doubtless be fully recovered in September and October. The corn carried, of course, showed a considerable increase in August this year, as the movement during the preceding year was abnormally small. The marketing of cotton in August is usually small, but this year the marketing was exceptionally light, there being received at the Southern outports less than 6000 bales, as compared with nearly 137,000 bales in August, 1902.

It seems clear that if the speculative propensity of the average trader can be kept within moderate bounds during the next few months, business will resume its natural channels—one of the greatest benefits possible for the general community.

The Outlook for the College Man.

Never before in the history of the world has it been so easy for the ambitious youth to obtain a college degree. The public schools provide all the preliminary training required for admission, and this without expense to the scholar. Once having passed his entrance examinations the road is assured, provided he has the necessary grit and self-reliance, and is free from the germ of laziness. In these days the man working his way through college is respected by faculty and student corps; he pays his way by the sweat of his own brow, and his independence is admired even by those who do not have to follow a like course. He chooses his profession, plods along, receives his degree, and enters the world to fight his battle and either to succeed, fail, or

stand still as a nonentity. Now the question is this: Does the college graduate have a better chance than the man who never saw such an institution? From a strictly utilitarian point of view is the equipment he has acquired worth the candle, and will it enable him to reach his goal more quickly?

Inferentially, this might be answered affirmatively by mere reference to the fact that colleges are springing up all over the land, and yet the patronage these new institutions receive has no effect upon the older ones. From this it is certain that the demand exists for the so-called "higher education." Vast sums are necessary to keep all the colleges running, but endowments are frequent and liberal, so that we rarely hear of a college being compelled to close its doors because of lack of funds. In this way the demand is met. Those who give for this purpose certainly believe in the advantages of an education.

There is another and far stronger argument in favor of a college course. All of our great corporations and manufacturing concerns seek the college man, but in no sense do they seek him because of his familiarity with their business or with any detail of their transactions; neither do they want him for the smattering of knowledge he may be able to devote to their interests. They take him solely for the training he has gone through, and not for the wisdom that may be stitched in the lining of his cap. That training the man of affairs can further develop along lines which will be useful to him. The "having learned how to learn" is of vastly more importance in actual operations than all the learning absorbed in any course of four years.

Considered in the aggregate the demand appears to be about equally divided between the classical and the technical graduate. Concerns engaged wholly in manufacturing prefer a man who has been trained along lines fitting their own processes, but there are others of equal importance and magnitude who find room for a classical training. The Pennsylvania Railroad Company, with the vast diversity of their transactions, can always find a niche in which to place a college man, no matter what course he may have pursued. If he shows ability in any direction whatever, there is an opening, and it is never the case of a round plug in a square hole. The General Electric Company now have at their works nearly 150 young men who graduated from technical schools last June. These men are really serving a probationary period to test their qualifications and their practicability as builders or handlers of electric apparatus. They are passing through a preparatory course, or advanced system of apprenticeship, to find what branch of the business they are best qualified for. In all cases of this kind the rapidity of advancement depends entirely upon the industry and ability of the worker. All companies are willing, and in fact eager, to push a man forward just as quickly as he can go, but, on the contrary, they have no use for a man who promptly settles down to one job and evinces no ambition. There is no philanthropy in this; it is a clear cut business proposition by the company to obtain the best help possible. A man who masters one task is expected to kick, and it is hoped that he will kick, for something else in order that he may learn more.

Some years ago the graduate was not paid enough to enable him to live comfortably. To meet his necessary expenses he had to have outside resources. He was treated as a regular apprentice and was paid a boy's wages. Managers found that this policy worked to their disadvantage by depriving them in many cases of the services of bright men who could not depend upon outside assistance. This has been changed, and the college

apprentice is now paid wages sufficient to permit him to live decently by his own exertions. The manager displayed no charity by this action. He saw how his business was handicapped by the old method and changed it for his own benefit only. Incidentally he helped the graduate, but the idea of assisting the graduate did not influence him in the least to alter his plans. It gave him the best talent the college world had to offer, and presented an equal opportunity to rich and poor.

Records prove that in producing establishments the college man at thirty is far in advance of the man of the same age who entered by the apprentice door. The graduate may have been twenty-five before he donned a jumper, but in five years he learned more with the college training he had as a foundation than the regular journeyman in 15 years of actual work in the shop. His reward is apparent in the greater responsibility of the position he occupies and in the greater wages he receives. Even at thirty it is shown that the four years spent at college were not wasted, and that he really acquired the ability to learn how to do things.

CORRESPONDENCE.

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PERSONAL.

Henry Wick of Youngstown, Ohio, formerly president of the National Steel Company, has gone to Alaska to visit some gold mines in that country in which he is interested.

John Stevenson, Jr., former vice-president and manager of the Sharon Steel Company, returned a few days ago from a four months' tour in Europe, and his home coming was made the occasion for a royal welcome by the people of Sharon, Pa. It has been reported that he would engage in the building of large gas engines in some Western Pennsylvania location, but it is authoritatively stated that he has not yet decided as to the department of manufacturing in which he will embark.

Dr. J. A. Holmes, Chief of the Mines Department of the St. Louis Universal Exposition, spent several days in New York last week on business connected with the iron and steel exhibits. Dr. Holmes reports that he is meeting with great success in securing proper representation in his department.

William Bletsoe has been appointed master mechanic of the Bessemer plant of the Republic Iron & Steel Company in place of James Matthews, who was killed a short time ago.

A De Haber, a mechanical engineer, connected with the Baldwin Locomotive Works, has been appointed manager of the Harris Smoke Consuming Furnace Company of Philadelphia.

Prof. W. N. Haleman, head of Charles M. Schwab's industrial school at Homestead, Pa., has made a statement that Mr. Schwab proposes to establish industrial training schools at several favorable points in Illinois, Indiana and Ohio. The plan will be similar to that of Andrew Carnegie in his library donations. A city raising a specified amount will be endowed with a sum, depending on the population, sufficient to erect proper buildings and give the institution a prosperous start.

James H. Slocum, for some years private secretary to W. E. Corey, when he was president of the Carnegie Steel Company, at Pittsburgh, has removed to New York, retaining the same position with Mr. Corey, now president of the United States Steel Corporation.

A. G. Hammerberg has resigned as chief engineer of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, to take charge of the engineering work of the Seattle Iron & Steel Company, who are erecting in Seattle, Wash., a new open hearth steel plant and rolling mill.

George G. Blackwell of Liverpool, England, arrived in New York on September 26, accompanied by his wife and daughter. He will devote a few days to business in New York and will afterward visit the leading business centers of the country.

Eskin Maden of Steubenville, Ohio, has been appointed master mechanic of the Bessemer plant of the Republic Iron & Steel Company, at Youngstown, Ohio.

J. K. Graham, formerly manager of the Keystone Works of the American Bridge Company in Pittsburgh, has been transferred to the Edgemoor plant of this company in the same capacity. Mr. Graham was presented by the employees of the Keystone Works with a silver coffee set and a silver table service.

The Tin Plate Export Trade.—Statements in the daily papers this week to the effect that the American Tin Plate Company had ordered all their mills to begin the manufacture of tin plate for export under a 3 per cent. reduction in wages for the tonnage men appear to have produced the erroneous impression that the company were making a special effort to secure export business. The fact that notices of this tenor had been posted up in some of the company's plants is nothing new or unusual, but is simply in conformity with the practice that has been followed since last fall, when an agreement was come to between the American Tin Plate Company and the Amalgamated Association, whereby the mill men conceded "such part of a reduction in wages of 3 per cent. as might be necessary to reimburse the tin plate com-

pany in securing drawback tin plate business." This 3 per cent. concession from scale rates has formed a fund which has been held in trust to reimburse the company for the rebates paid by them on their export business. Each time this reserve fund has become low, it has been the custom to post such notices as that referred to in the papers this week, and this has occurred from time to time during the year since the agreement went into effect. The company are doing a steadily increasing business in tin plate, which goes abroad in the form of packages, and which formerly went to the foreign manufacturers under the rebate clause of the tariff act.

The American Can Company.

The American Can Company have issued a statement showing the financial condition of the company as of August 31. The statement is given out by the management in connection with the recent suit of F. Shoenfield to restrain the payment of a dividend on the preferred stock. The suit has been dismissed by the court and the dividend will be paid October 1. It will be seen that the cash assets, accounts receivable and merchandise on hand largely exceed the liabilities named. It was probably this condition, in connection with the statement of the counsel of the company, showing the profits for the fiscal year ended March 31 and the profits for the five succeeding months, that induced the court to deny the order restraining the payment of the preferred dividend. The balance sheet as of August 31, 1903, compares with that of March 31, 1903, as follows:

	Assets.		
		August 31.	March 31.
Plants, real estate, patents, &c.	\$75,304,626	\$75,298,083	\$6,543
New construction and improvements	2,370,364	1,808,339	562,025
Investments	510,910	1,009,439	*498,529
Cash and cash items	1,465,454	1,639,291	*174,037
Accounts receivable	1,971,490	1,488,214	483,276
Merchandise inventory	5,994,532	5,121,901	872,631
Totals	\$87,617,076	\$86,365,268	\$1,251,808
		Liabilities.	
Preferred stock	\$41,233,300	\$41,233,300	
Common stock	41,233,300	41,233,300	
Mortgages assumed	113,000	113,000	
Accounts payable	1,001,451	1,123,393	*\$21,942
Contingent inventory reserve	155,269		155,269
American Solderless Can Company	35,807		35,807
Profit and loss	3,844,949	2,662,275	1,182,674
Totals	\$87,617,076	\$86,365,268	\$1,251,808

* Decrease.

Profit end of fiscal year, March 31, 1903.....\$2,113,746
Profit, April 1, 1903, to August 31, 1903 (five months) 1,731,202

The profits shown in the annual statement of March 31, 1903, of \$2,662,275, were reduced by \$548,528, this amount being written off after the annual meeting for depreciation of securities held in the treasury of the company.

The Pennsylvania Steel Company's bid of \$5,255,514 for the steel superstructure of the Blackwell's Island Bridge, New York, was rejected by Bridge Commissioner Lindenthal as being excessive. There were no other bidders. The work will be readvertised, but it is understood that modifications will be made in some of the most severe specifications.

W. M. Dillon of Sterling, Ill., has filed a bill in the local Circuit Court to compel Mrs. Griswold, widow of the late J. W. Griswold, to comply with the terms of a certain agreement made between Mr. Dillon and his partner, Mr. Griswold, and asking for the appointment of a receiver for the Dillon-Griswold Wire Company. The bill asks for the appointment of a receiver on the ground that the wire mill is not properly conducted and making sundry other allegations. The suit will be tried in October. Mr. Dillon is said to own nearly \$100,000 of stock in the wire mill, and he takes the ground that the legal action he has just taken is justifiable in order that his rights may be protected. A short time ago the wire company brought suit against Mr. Dillon for \$80,000, and against the Northwestern Barb Wire Company, of which Mr. Dillon is president, for infringement upon patents on fence making machines.

MANUFACTURING.

Iron and Steel.

There is much that is incorrect in the daily press dispatches that the five furnaces of the Lackawanna Iron & Steel Company at Lebanon, Cornwall and North Cornwall, Pa., will suspend operations with the coke ovens at Lebanon and that 2000 men will be thrown out of employment. An official of the company is quoted as saying that the two furnaces at Lebanon only are going out of blast, the others having not been operated for a long time. Instead of 2000 not 300 men will be affected.

Work on the new furnaces of the Carnegie Steel Company at New Castle, Pa., is going on rapidly. The small plant which was built ten years ago by the Shenango Valley Steel Company could now scarcely be found in the extensive establishment, which carries the name, "New Castle Works of the Carnegie Steel Company." The Raney & Berger double furnace of the same company is to be torn down soon and rebuilt into a modern plant in size and appliances.

Work on the Nova Scotia Steel & Coal Company's blast furnace at Sydney Mines is now nearly completed and about all that now remains to be finished is the top structure and the lining of the furnace. The four stoves also are about completed and the bricklayers are now engaged in lining them. The erection of the shed over the steel furnace, which is to be 700 feet long, has been commenced.

The Lebanon Iron Company of Hebron, Pa., have purchased 3 acres of land adjoining their plant. It is proposed to enlarge the plant, which has become too small to accommodate the business of the company.

The four rolling mills and the two blast furnaces of the Susquehanna Iron & Steel Company of Columbia, Pa., were closed last week. The furnaces have been blown out. The shut down is indefinite.

Information comes from Gas City, Ind., that the outlook is favorable for an early resumption of operations at the American Tin Plate Works at that point. Work on the new gas line is nearing completion, and it is thought that there will be a sufficient quantity of gas to run full force with little delay.

The American Steel & Wire Company's plant at South Sharon, Pa., has been placed on double turn.

The Stewart Iron Company, Sharon, Pa., have had their muck bar mill and blast furnace closed down for some time for repairs. The repairs are now completed and the plant will at once resume in all departments.

The National Tube Company have decided not to attempt to start up the Continental Works in Pittsburgh until the men voluntarily agree to go back to work. It will be recalled that the puddlers at this plant refused to work until the Amalgamated Association scale had been signed. The other employees were anxious that the mill be started, but in view of the fact that the puddlers still refuse to return to work until the scale has been signed, it has been decided to allow the plant to remain idle.

The Detroit Iron & Steel Company, Detroit, Mich., announce that the Zug Island Furnace, River Rouge, Mich., will blow in early in November. The first ore will be received this week.

The Shenango works of the American Tin Plate Company, at New Castle, Pa., which contain 30 hot mills, were closed down on Saturday, September 26. The plant will be idle for about one month to make necessary repairs.

The open hearth plant of the Clairton Steel Company, at Clairton, Pa., was closed down about four weeks ago with the intention of allowing the plant to remain idle for several months. However, the company have received a number of orders for billets and also specifications on old contract and started up in full on Monday, September 28. The plant contains 12 50-ton open hearth furnaces and turns out about 1200 tons of steel a day.

At a recent meeting of the Board of Directors of the La Belle Iron Works, Steubenville, Ohio, the following officers were elected: J. E. Wright, president; A. J. Clarke and E. W. Mudge, vice-presidents; W. E. Beswick, secretary; D. J. Sinclair, treasurer, and W. B. Higgins, assistant treasurer.

The William B. Pollock Company, Youngstown, Ohio, builders of steel plate construction for blast furnaces and steel works, are building the iron work for No. 4 blast furnace now under erection by Carnegie Steel Company, at Youngstown, Ohio. The cast house and addition to the boiler house are being erected by the Fort Pitt Bridge Company of Pittsburgh, two blowing engines are being installed by the William Todd Company of Youngstown, and the building containing the blowing engines is being erected by the American Bridge Company. Stirling boilers are being added and the coke and limestone bins are being built by the Columbia Bridge Company.

The Stark Rolling Mill Company, at Canton, Ohio, started up their sheet mill on Monday morning, September 28, and intend in the future to operate the mill nonunion. The Amalgamated Association refused to remove limit of output, and for this reason the company have decided in the future to operate their plant on a nonunion basis. A large number of the old employees returned to work.

The Farmers' National Bank of Findlay, Ohio, have petitioned for a receiver for the Ohio Rolling Mill Company of that city, asking judgment in the sum of \$28,608 on mortgage foreclosure.

The statement that the National Rolling Mill Company, Hartford City, Ind., had closed down their mills on account of the bursting of a boiler tube and the inability to obtain common labor, the Italian colony having deserted, is not entirely correct. We are officially informed that the bursting of a flue on one of the 10-inch boilers compelled them to lose but one turn. The mill is running in first-class shape and the company expect to run at Hartford City as long as desired. Not one turn has been lost in the nut mill for the past two months. Regarding labor, the company say that they have been able to employ all the common labor needed. They employ no Italians, and none of the employees have deserted.

General Machinery.

The James Bonar & Company, Incorporated, of Pittsburgh, with a capital of \$75,000, have taken over the business of James Bonar & Co., manufacturers of steam appliances, machinists and brass founders. They will continue to manufacture and handle a full line of first-class steam appliances and are now erecting a first-class machine shop and brass foundry at Fortieth street and Allegheny Valley Railway, Pittsburgh. The machinery in the new plant will be of modern design, and included in the equipment will be a special high pressure boiler for testing purposes. The brass foundry will be fitted with modern machinery and a specialty will be made of the Bonar oil filter. The company will also be in position to do galvanized iron work. The officers are as follows: James Bonar, president; Reed F. Blair, vice-president; Joseph Cawley, secretary, and George G. Seamans, treasurer.

A 2-ton traveling hand crane is required by the Builders' Iron & Steel Company, East Cambridge, Mass., for their new plant. The building will be 60 x 120 feet. There will also be a two-story headhouse, 30 x 60 feet.

The Fischer Foundry & Machine Company, South Side, Pittsburgh, manufacturers of rolling mill, glass works and general machinery, have purchased from C. C. Wals, Cincinnati, Ohio, all patterns, patents, drawings and good will pertaining to his well-known line of shears and punches. The manufacture and sale of these machines will now be conducted by the Fischer Foundry & Machine Company on a much larger scale than heretofore in connection with their line of hydraulic and general plate, bloom, billet and bar shears and rolling mill machinery generally. Mr. Wals will have charge of the punch and shear department as well as the designing of these machines to meet special requirements, to which particular attention will be given.

The Keystone Farm & Machine Company of York, Pa., are increasing the size of their plant threefold. The contractor began work on the improvement September 21. Greatly increased business made the change necessary.

The Belting & Machinery Company, Rochester, N. Y., recently incorporated, have purchased of the Estes Mfg. Company their belting and machinery business and will continue the manufacture of leather belting, keeping up the high standard that has always been maintained by them. In addition to maintaining a large stock of power transmission machinery, including the latest pattern ring rolling hangers, couplings, shafting, wood and steel pulleys, the company will continue to represent leading manufacturers of iron and wood working machinery. They are agents for Hendey Machine Company, Torrington, Conn.; Warner & Swasey, Cleveland, Ohio; W. F. & Jno. Barnes Company, Rockford, Ill.; Kempsmith Machine Tool Company, Milwaukee, Wis. They will also carry a large and comprehensive stock of Jessops' tool steel in ordinary and annealed sizes.

Power Plant Equipment.

The Ball Engine Company, Erie, Pa., manufacturers of automatic cut off engines, are building an 800 horse-power horizontal cross compound Corliss engine, direct connected to Westinghouse alternator, for the National Tube Company, Pennsylvania department, and also a 500 horse-power Corliss engine direct connected to 300 kw. generator for the United States Coal Company, Cleveland, Ohio. They are also building a 500 horse-power cross compound Corliss engine for the Whiting Foundry Equipment Company, Harvey, Ill. These are all of a new type of Corliss which they have recently brought out, and which has improvements over the ordinary type of Corliss engine.

The Boyne City Electric Company, Boyne City, Mich., are to erect a 300 horse-power steam plant to supply electricity for lighting the city until a hydraulic plant can be constructed. The temporary power plant will be ready for operation about the middle of January. The hydraulic plant, which will have several times the capacity of the steam plant, will be constructed next summer and will not be ready for operation until January of 1905. E. A. Stowe is president, Henry Idema vice-president, C. C. Follmer secretary and treasurer.

In regard to the report that the plant of the Marietta Boiler Works, at Marietta, Ohio, builders of boilers, tanks and general plate and sheet iron work, would be removed to East Butler, Pa., we are advised that a movement is on foot whereby Marietta parties expect to purchase the capital of the company and retain the works in Marietta.

The W. L. Casady Company have been incorporated at South Bend, Ind., to manufacture engines and bicycles. Wm. L. Casady, Oliver Casady and George A. Cleveland, directors.

The Otto Gas Engine Works, Philadelphia, Pa., have let a contract for alterations to their plant, costing \$4000.

Foundries.

The Manufacturers' Foundry Company, Waterbury, Conn., have increased the capital stock from \$10,000 to \$50,000.

The Stoever Foundry & Mfg. Company of Myerstown, Pa., recently made a 12-ton shipment of castings to the Canadian Copper Company of Copper Cliffs, Ontario.

The Dimmick Pipe Company, Birmingham, Ala., keep busy, as they have been since commencing operations in August, 1900. Among contracts they are now filling are pipes, hydrants and valves for the municipal water works of Sioux Falls, S. D.; Memphis, Tenn.; Dallas, Texas; Oklahoma City, Okla.; Mount Airy, N. C.; Albion, Vt., and Meadville, Pa. They have also in hand a very large contract placed with them early in the year by the Spring Valley Water Works, San Francisco, Cal.

The McCallum Steel Wagon Company of Plymouth, Ind., recently incorporated with a capital stock of \$225,000, \$25,000 of which is preferred stock. The offices of the company, which have previously been in Chicago, will be in Plymouth. The directors of the company are James McCallum, Elias G. Raffety, J. W. McCallum, H. Raffety and M. B. Raffety. James McCallum is president. The McCallum Steel Wagon Company have taken over the plant formerly used by the Plymouth Wagon Company and will make extensive additions, one of the first of which will be a steel plant and foundry 100 x 200 feet. The principal product will be improved steel weather proof farm, freight, logging and city wagons, special attention being paid to the manufacture of weather proof wheels for city and heavy freighting wagons of other manufacture. The company also announce that they expect to take up the manufacture of buggies and carts some time in the future.

A number of directors and officers of the Pittsburgh Valve & Fittings Company, with offices in the Frick Building, Pittsburgh, and works at Barberton, Ohio, made a trip from Pittsburgh to Barberton last week to inspect the new works, which are nearly completed. A part of the plant has been in operation for three months and the company have received so many orders that it has been decided to put as much of the plant as possible on double turn and the uncompleted portion of the works will be finished up as fast as possible. This company are manufacturers of iron pipe fittings, brass and iron valves, cocks, &c., for steam, gas, water and oil.

The Ashland Steel Range & Mfg. Company, Ashland, Ohio, have purchased the equipment for their new foundry, 55 x 100 feet, now under erection. The equipment for the nickel plating department, now being installed, has also been secured. These two new departments are expected to be ready for operation early in November, when the company will do a general jobbing business in light and medium castings in connection with their regular work.

Bridges and Buildings.

The Buffalo Structural Steel Company, Buffalo, N. Y., are completing a 100 x 150 foot structural steel and brick addition to their plant. During the past year they have been obliged to operate their plant night and day to keep up with their contracts. They are now engaged on the structural steel work for the new linseed oil works of the Spencer Kellogg Company, that city, and other large contracts.

The Memphis Bridge Company, Memphis, Tenn., who were recently incorporated with a capital stock of \$50,000, are said to have purchased a 5-acre site in South Memphis, where they propose to erect a bridge and structural steel plant. The incorporators are W. M. Hewitt, G. L. Austin, R. L. Owens, V. H. Smith and C. O. Horton, all of whom are said to be experienced bridge builders.

Fires.

The large plant of the Carborundum Company, on Battery avenue, Niagara Falls, Ontario, was totally destroyed by fire early on the morning of September 26. The factory was a branch of the larger concern at Niagara Falls, N. Y., and the officials of the company were preparing to enlarge it by the erection of a graphite factory covering six lots.

The oil house, cement house and carpenter shop of the Canadian Niagara Power Company at Niagara Falls, Ontario, were destroyed by fire on September 24.

Part of the machine shop of McIntyre & Henderson, Baltimore, Md., was destroyed by fire September 24, entailing a loss of \$15,000.

The power house of the Brooklyn Rapid Transit Company, at First avenue and Fifty-second street, Brooklyn, N. Y., was damaged by fire September 26. None of the important machinery was damaged.

The foundry of C. H. Honke, Rockford, Ill., was destroyed by fire September 22, causing a loss of about \$10,000.

The Wickham & Chapman Piano Plate Company's shops at Springfield, Ohio, covering 8 acres, were destroyed by fire September 26. The loss is placed at between \$100,000 and \$150,000.

The machine shops of the Milton F. Williams Mfg. Company, St. Louis, Mo., were almost totally destroyed by fire last week. The loss on engines, machinery and tools is placed at \$6000.

On September 27 a fire at Saginaw, Mich., destroyed two warehouses and part of the foundry of A. F. Bartlett & Co., the plant of the Christie Buggy Company and the machine shop of L. Clinkofstine, causing a total loss of \$90,000.

The machine shop of the G. W. & F. Smith Iron Foundry, at Roxbury, Mass., was destroyed by fire September 18. The loss is about \$3500.

The industrial center of Gardenville, in the town of West Seneca, N. Y., was burned September 23. Charles F. Schoepflein was the owner of the buildings, which include a chair factory, power house, foundry and offices. The loss is \$100,000.

The foundry of the Moline Scale Company, Moline, Ill., was recently destroyed by fire, causing a loss of \$7000.

A report from Beaumont, Texas, states that on September 23 a fire in the Shoestring oil district destroyed 35 derricks, causing a total loss of \$125,000.

The hat manufactory of Edwin Adams, South Norwalk, Conn., was practically destroyed by fire September 28. The loss is estimated at \$20,000.

The factory of the Standard Varnish Company, Chicago, Ill., was nearly consumed by fire September 28. The loss is stated to be about \$350,000.

Several buildings of the Connell Powder Mills, near Shamokin, Pa., were wrecked by an explosion September 28, causing a loss of \$35,000.

On Sunday night, September 27, the plant of the Ferracute Machine Company, at Bridgeton, N. J., was struck by lightning and burned to the ground. The entire equipment of expensive machinery and a large stock on hand were totally destroyed. While the estimated loss is placed at \$120,000, it is understood that the plant could not be duplicated for that amount of money. No plans have as yet been formed for rebuilding. While it is probable that the plant will be rebuilt, nothing will be decided until the insurance is adjusted.

Hardware.

Winter Brothers Company, Wrentham, Mass., are remodeling their shop, which change will give them another story available for manufacturing purposes. This company are making taps and dies, reamers, punches, screw plates, tap wrenches, &c., and also do special work in this line.

The Salem G. Le Valley Company have been incorporated at Buffalo, N. Y., with a capital stock of \$30,000, and will deal in all kinds of sporting goods and sportsmen's supplies, taking over and continuing the long established business of Salem G. Le Valley, deceased. The directors are Mary Le Valley, Edward Cox and Stephen T. Lockwood.

Very large orders were recently placed by the War Department with the H. W. Johns-Manville Company, 100 William street, New York, for roofing to be used on the army buildings in the Philippine Islands. A total of 14,020 rolls of roofing, over 900 tons, was ordered: enough to cover 65 acres, or make a strip a yard wide about 200 miles long. We are advised that ten bids were submitted and that the award was made only after careful investigation by the War Department and the Supervising Architect of the Treasury. Prompt delivery of the roofing was an essential of the order, and it is of interest to note that one order for 11,120 rolls was completed within 30 days, and another for 2900 rolls within ten days of receipt.

Thomas Niland has resigned his position as superintendent of the Bergen Glass Shop of Meriden, Conn., and has started in business for himself in the manufacture of high grade mirrors. He has located his shop at Meriden.

The Russell & Erwin Mfg. Company, New Britain, Conn., have started up their new 1000 horse-power Flier & Stowell engine, which will provide power for the new seven-story building, and in addition will replace three small Westinghouse engines and about 300 horse-power of electric motors in other buildings. The big engine's 20-foot fly wheel is belted to the jack shaft by a 62-inch leather belt. The jack shaft runs four generators and four rope drives to the factory rooms. The engine is a tandem compound on one side, 18 x 36 cylinders, and 42-inch stroke, and simple on the other side, with a 24-inch cylinder and a 42-inch stroke. The total weight of the engine is 189,000 pounds. The engine is running in a satisfactory manner.

The New England Enameling Company of Middletown, Conn., are adding new buildings for their retinning, galvanizing and coarse tinning departments.

The American Cycle Mfg. Company are to erect a new building at their Hartford, Conn., works, for the setting up and testing of gasoline engines, the purpose being to take this department out of the main works. The new building will be of fire proof construction, one story high, and probably 50 x 70 feet on the ground.

The International Silver Company are to erect an addition to the forge shop at their Factory H, the C. Rogers & Bros. plant at Meriden, Conn. The addition will be 16 x 42 feet. The demands upon the forge shop made this additional space imperative. The work will be done this fall.

The Charles Parker Company, Meriden, Conn., have completed their new iron foundry and are renovating and rearranging their shops with a view to the further systematizing of their works. The company are pushing their new ejector gun, which is manufactured only in grades costing \$150 and upward. The company wish it understood that they are not placing the new ejector on their older model guns, though frequent requests to have this done are being received.

The Edward Miller Company, Meriden, Conn., are occupying their new factory building, which is 45 x 100 feet and three stories high. A new Ball engine has been installed and the machinery of the new building is electrically driven. A new line of gas and electric fixtures is being manufactured.

The New England Broom Company are about to begin the manufacture of the Twentieth Century broom at New Haven, Conn. The company are a branch of the International Broom Company of New York, but are a distinct corporation having territorial rights. They are a Maine corporation, with an authorized capital stock of \$300,000. The officers are: President and treasurer, William Spittler; vice-president and manager, A. A. Arnott, and secretary, W. H. Spittler; these officers constituting the Board of Directors.

The L. S. Starrett Company, Athol, Mass., are putting up an addition to their plant, 40 x 50 feet, two stories. The building will be of brick with concrete foundations.

Fayette R. Plumb, Incorporated, Frankford, Philadelphia, Pa., have recently made a large shipment, covering their entire line of edge tools, to the Insular Government of the Philippine Archipelago, Manila, P. I., which is endeavoring to introduce American goods in those islands. In edge tools, Plumb's line was particularly specified in the order. The company are making some extensive improvements in their plant. Additions are being built to their grinding and handle driving departments, new buildings, 35 x 65 feet, being erected for the purpose. Orders are said to be not as plentiful as some time ago, although they are very busy and still considerably behind on deliveries.

MISCELLANEOUS.

The Brier Hill Coke Company of Youngstown, Ohio, own 1200 acres of coal lands in the Connellsville region and are building 300 ovens at Seabright. The buildings in connection with the coke plant are to be of bluestone and include a boiler house, engine house, machine shop, carpenter and blacksmith shops, lamp house and offices. The plant is expected to be in operation within the next eight months, and all the machinery has been purchased.

The Eureka Mfg. Company have been organized at Erie, Pa., to take over the business of Wm. Lineburger & Co., manufacturers of specialties, and will continue in the same line.

The Kane Plate Glass Company of Philadelphia, Pa., are planning for the erection of a \$200,000 plant of brick and steel at Kane, Pa. Complete power and machinery equipment will be required.

The Carey Safe Company, Buffalo, N. Y., have recently made considerable additions and improvements in their plant and equipment.

The Richmond Conduit Company, Limited, manufacturers of steel fiber, &c., are building a plant at Niagara Falls, Ontario. The main building will be 150 x 150 feet.

The Buffalo Fertilizer Company, Buffalo, N. Y., will erect a fertilizer building to cover 165 x 610 feet, to be equipped with electrically driven machinery.

The newly formed Scranton Abrasive Wheel Company, capitalized at \$50,000 and backed by Wilkes-Barre and Scranton men, are erecting a plant at Scranton, Pa., and expect to begin operations about November 15. About 30 men will be employed at the start.

Charters were issued last week at Harrisburg, Pa., to these corporations: The American Spiral Spring & Mfg. Company, Pittsburgh, capital \$30,000; M. F. Lieberman Sheet Metal Company, Economy, Pa., capital \$73,000; the Lautner Hardware Company, Allegheny, capital \$125,000.

The Illinois Steel Company will erect a two-story office building, 42 x 72 feet, at their new cement plant at Buffington, Ind. The building will be constructed of cement, with a tile roof. The interior finish will be of hard wood. The estimated cost is \$20,000.

A party of Chicago capitalists will erect a 2000-barrel cement plant at Saverton, Mo. The order for the grinding machinery went to the Bradley Pivertizer Company, Boston, Mass.; kilns, Vulcan Iron Works, Wilkes-Barre, Pa.; boilers, Sterling Boiler Company, Chicago, Ill., and engines, Atlas Engine Company, Indianapolis, Ind.

The Textile Specialty Company have been incorporated at Buffalo, N. Y., with a capital stock of \$100,000, and will manufacture special weaving machinery which the company controls and will also engage in the manufacture of various textile fabric specialties which their patent weaving machinery will produce. The directors are L. A. Mason, James Stoddard and S. G. Hurst of Buffalo, R. H. Peters of Batavia, and G. S. Van Gorder of Pike, N. Y.

A. F. Karges, manager of the Karges Furniture Company of Evansville, Ind., is organizing a company to erect a wagon factory in that city to cost \$50,000.

JONES & LAUGHLIN STEEL COMPANY ON THE OUTLOOK.

A leading official of the Jones & Laughlin Steel Company of Pittsburgh, Pa., gives his views on the present condition and outlook in the steel trade as follows:

The iron and steel business has shown a material improvement within the last two or three weeks and, indeed, orders are coming in much better than was expected. All of our mills and plants are in operation. In going over our books we find that the business is above the average of the past ten years, although not up to the average of the past two years, a condition which we did not expect and which should not be expected by any person, because of the fact that the past two years were periods of abnormal activity, due to special causes, and activity of such a character as was expected to continue by no person in the iron and steel business. The evil reports sent out by Wall Street regarding the steel business have been entirely unfounded, and instead of the trade going to the dogs, as they state, the business promises to grow materially better within the next two or three months. This applies particularly to the manufacture of steel and steel products, as the iron trade branch shows the effect of overproduction in the early part of the year and the importation of nearly 1,000,000 tons of foreign iron last fall during the freight congestion, when it was impossible to get American iron to keep the mills fully employed. The fact that the country absorbed 1,000,000 tons of foreign iron and steel, mostly iron, and that the trade continues in such a satisfactory state shows the healthy condition of the United States and demonstrates its great consuming power.

THE VICTORIA FALLS POWER SCHEME.

The Victoria water falls on the Zambezi are approximately 1 mile wide by 420 feet high, or about twice the size of our own falls at Niagara. The near approach of the Cape to Cairo Railroad, which is planned to cross the Zambezi just below the falls, makes it probable that some small portion of this vast power will be utilized. This was indicated a few days ago in the speech by the chairman of the African Concessions Syndicate, Limited, who will execute the scheme. The power obtained is to be transmitted electrically by a great net work of lines all over the iron and copper fields in the immediate district, and further afield to the gold mines within 400 or 500 miles of the power stations; there is talk of even supplying a country whose area is not limited by 1,000,000 square miles. How far these gigantic plans are practicable it is, of course, impossible to say, but there is every reason for believing that as our knowledge of the transmission of electrical force increases step by step the conveyance of power to great distances without losses which would render the cost prohibitive comes more and more within the scope of realization. There is at any rate no reason to doubt that at least as much as can be done at Niagara can be done at Victoria, for the falls lend themselves, if anything, to the easier development of power. A site for a township has already been proposed near the falls, in a neighborhood that is healthy both in the wet and dry seasons.

Charles Kirchhoff, editor of *The Iron Age*, is expected to arrive from Europe this week.

Wm. H. Hulick of the Warren Foundry & Machine Company, New York, who has been seriously ill, is now convalescent.

H. A. Jackson, formerly Pittsburgh manager for A. M. Crane & Co., Incorporated, has severed his connection with that company, and, commencing October 1, will be identified with Naylor & Co., iron and steel factors, Frick Building, Pittsburgh.

The Iron and Metal Trades.

The heavy decline in the values of railroad and industrial stocks has had a depressing effect on the Iron trade. The apprehension of a financial panic has induced extreme conservatism among buyers. Thus far no banking institutions have been embarrassed by the liquidation in the stock market, and this in itself is strong ground for hopefulness. That the turn for the better which has occurred this week may not merely be temporary is most fervently hoped.

A matter which may have considerable effect on the Iron trade, as it will demonstrate that at least some of those having great enterprises in hand are not disturbed by immediate conditions, is the publication to be made this week of the specifications for the great tunnels in this city to be built by the Pennsylvania Railroad Company. It is understood that vast quantities of material will be called for, including over 300,000 tons of castings.

Pig Iron manufacturers are very much in earnest in their endeavor to curtail production. Meetings have again been held this week, both in the East and the West, for the purpose of bringing about widespread action in accomplishing this result. It is hoped to effect a reduction of at least 20 per cent. on the output as measured by the quantity produced in September. The restriction, it is pointed out, can be effected by blowing out a few furnaces, by the stoppage of a day or two in each week, a reduction in the revolutions of blowing engines, or by other means thoroughly familiar to blast furnace managers. Efforts are being made to secure the co-operation of Pig Iron producers throughout the entire country. The excess of production over consumption is not believed to be very serious, possibly not 10 per cent., and an effort of this kind continued for a month would bring about a more healthy relation of the supply to the demand. Some furnace owners are not waiting for a general agreement to be made, but are now blowing out to prevent further loss. Notices posted at a number of Eastern furnaces that wages will be reduced 10 per cent. show that drastic measures are necessary.

Consumers of Pig Iron have not yet been prompted to make much heavier purchases on the possibility of a reduced output. That they are carrying very small stocks is shown by the urgent demand that shipments be made as promptly as possible.

The Southern Pig Iron producers are still endeavoring to secure a reduction in the freight rate to Northern markets. A meeting of the Southern Pig Iron Committee will be held in this city on Thursday and the question will again be taken up.

It would not be surprising if the light shipments of cotton to Europe from Southern ports would cause such low freight rates to be offered on Pig Iron by steamships desiring cargoes that an export trade would develop. The domestic Pig Iron market would be considerably relieved if Southern stocks could be reduced in this manner.

The demand for Finished Iron and Steel products shows a little improvement, and prices in a general way are well maintained. The opinion prevails that manufacturers of finished products should not permit themselves to become unduly apprehensive as to the future and attempt to secure more business by making concessions. The general condition of the country is satisfactory, and the demand in many lines is simply postponed to await developments. If manufacturers preserve their equanimity and maintain prices, it is believed that ere long the consumptive demand will compel an increase in transactions, and this will restore the market to better conditions.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

At date, one week, one month and one year previous.

Sept. 30, Sept. 23, Sept. 2, Oct. 1.

1903. 1903. 1903. 1902.

PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	\$15.75	\$15.75	\$16.50	\$22.00
Foundry Pig No. 2, Southern, Cincinnati	<i>14.50</i>	14.75	14.75	22.25
Foundry Pig No. 2, Local, Chicago	15.75	15.75	16.50	23.00
Bessemer Pig, Pittsburgh	<i>16.35</i>	16.85	17.35	21.75
Gray Forge, Pittsburgh	<i>14.50</i>	14.50	15.50	20.75
Lake Superior Charcoal, Chicago	19.00	19.00	19.00	26.00

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	27.00	27.00	27.00	29.50
Steel Billets, Philadelphia	27.50	27.50	28.00	27.00
Steel Billets, Chicago	28.00	28.00	28.00	29.50
Wire Rods, Pittsburgh	<i>34.50</i>	34.50	35.00	35.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	29.00

OLD MATERIAL:

O. Steel Rails, Chicago	14.00	14.50	14.50	19.00
O. Steel Rails, Philadelphia	15.00	15.50	16.50	21.50
O. Iron Rails, Chicago	17.00	17.00	18.00	25.00
O. Iron Rails, Philadelphia	18.00	18.00	19.00	25.00
O. Car Wheels, Chicago	18.00	18.00	21.00	21.00
O. Car Wheels, Philadelphia	16.50	17.00	19.00	19.75
Heavy Steel Scrap, Pittsburgh	16.00	16.00	19.00	...
Heavy Steel Scrap, Chicago	13.00	13.00	14.00	18.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.50	1.60	1.60	1.92
Common Iron Bars, Chicago	1.50	1.50	1.55	1.85
Common Iron Bars, Pittsburgh	1.50	1.55	1.65	1.80
Steel Bars, Tidewater	1.73½	1.73½	1.70	2.00
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater	1.78	1.78	1.78	2.00
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.75
Beams, Tidewater	1.73½	1.73½	1.73½	Nom.
Beams, Pittsburgh	1.60	1.60	1.60	Nom.
Angles, Tidewater	1.73½	1.73½	1.73½	Nom.
Angles, Pittsburgh	1.60	1.60	1.60	Nom.
Skelp, Grooved Iron, Pittsburgh	1.55	1.60	1.80	2.02½
Skelp, Sheared Iron, Pittsburgh	1.65	1.70	1.87½	2.10
Sheets, No. 27, Pittsburgh	2.55	2.55	2.55	2.75
Barb Wire, f.o.b. Pittsburgh	2.60	2.60	2.60	2.50
Wire Nails, f.o.b. Pittsburgh	2.00	2.00	2.00	1.90
Cut Nails, f.o.b. Pittsburgh	2.15	2.15	2.15	2.05

METALS:

Copper, New York	13.50	13.50	13.75	11.55
Spelter, St. Louis	5.65	5.75	5.60	5.30
Lead, New York	4.40	4.40	4.12½	4.10
Lead, St. Louis	4.40	4.40	4.20	3.97½
Tin, New York	25.90	26.75	27.50	25.30
Antimony, Hallett, New York	6.25	6.25	6.37½	7.75
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.99	3.99	3.99	4.19

Chicago.

FISHER BUILDING, September 30, 1903.—(By Telegraph.)

Melters of Iron and consumers of Steel have shown little disposition during the week to depart from their previous attitude of inactivity, but there has been no pressure to sell, and even if there were it is doubtful if concessions would bring any more business to producers. Nothing but a rising market seems likely to attract buyers, and the present conditions do not point to early appreciation of either intermediate or finished products, while raw material, especially Pig Iron, has continued unsettled and feverish, with prices irregular. The Southern Pig Iron Association has not seen fit to change its official basis, but most of the trading has been done by independent furnaces at prices ranging from \$11 to \$11.50, Birmingham, for No. 2 Foundry. There is more Northern Iron, both Foundry and Bessemer grades, available in the open market, with more effort to sell, but little, if any, increase in business. As a week ago, business in all kinds and grades of Iron is confined to small amounts for early shipment. Corrective measures are being taken, but it is scarcely probable that they will have a decided effect upon the market for several months. In lines of Steel finished products agricultural specialties are most in demand, but even implement manufacturers are buying conservatively. The guaranteeing of prices of Bars and Pipe and other material against decline seems to have little weight with consumers, except in buying for early delivery. There has been more inquiry for Rails from electrical railways and Coal roads, but this has resulted in little business. Structural Material and Plates have continued quiet and Sheets unsettled, while Billets have met little demand. Old Material has continued weak, while Coke has been a little more active at about the prices cur-

rent a week ago. The car shortage in the ovens district is becoming more irritating.

Pig Iron.—An unsettled, feverish and weak market has been experienced for Pig Iron during the week, but prices have not changed essentially, and the general impression is that a reaction seems to be due, but no one has the temerity to predict when the turn will come; and in the meantime buyers continue to purchase small quantities for current requirements, showing little disposition to provide for needs beyond the first of the year. Conditions previously noted have been intensified rather than otherwise, and the natural result is a concerted movement in the North and isolated instances in the South for the blowing out of the less advantageously situated plants. It has come to the point of the survival of the fittest, the day when an ill-equipped furnace can continue in business at a profit having passed. It is reported that when orders on hand are worked out or the surplus Ore stock consumed the weeding out process will begin, which, however, will probably not come until the turn of the year. Stocks at Southern furnaces are said to be largely of lower grades of Foundry and Mill Irons, but even the higher grades are being piled, it is said, at Northern furnaces. The transfer of several Northern stacks from Bessemer to Foundry Iron has given a large supply of the latter Iron, but while the market is weak producers are disposed to fight further concessions with more determination. The market is very unsettled and prices irregular, there being a disproportion between the higher and lower grades of Foundry. The very largest buyers of Malleable Bessemer Iron in this district have covered for many months, as previously noted, but there are not a few of the smaller buyers yet in the market. The only large transactions in this market are said to be the covering of short sales, one transaction of 4800 tons having come to the surface during the week. Another sale of 3500 tons of Nos. 3 and 4 Foundry, Gray Forge and Mottled Iron is said to have been taken by the largest Iron Pipe interest on the basis of \$11 for No. 2 Foundry, but at the close it is reported that this transaction has not been entirely consummated. The majority of the sales have been in 50 and 100 ton lots, No. 2 Southern Foundry selling at \$11 to \$11.50, Birmingham, although the official price of the association is claimed to be maintained at \$11.75, Birmingham, for the Western territory. Buyers of Basic Iron are holding off, and Bessemer Iron, both Malleable and Standard, is selling in very moderate quantities. There has been a moderate demand for Charcoal and Car Wheel and Soft Irons, with small sales, mainly on the basis of inside quotations. The following are the approximate prices current, f.o.b. cars, Chicago, either for quick shipment or long delivery:

Lake Superior Charcoal.....	\$19.00 to \$20.00
Northern Coke Foundry, No. 1.....	16.50 to 17.00
Northern Coke Foundry, No. 2.....	15.75 to 16.25
Northern Coke Foundry, No. 3.....	15.25 to 15.75
Northern Scotch, No. 1.....	17.00 to 17.50
Ohio Strong Softeners, No. 1.....	17.50 to 18.00
Ohio Strong Softeners, No. 2.....	17.30 to 17.50
Southern Silvery, according to Silicon.....	17.10 to 18.10
Southern Coke, No. 1.....	16.10 to 16.35
Southern Coke, No. 2.....	15.35 to 15.85
Southern Coke, No. 3.....	14.85 to 15.35
Southern Coke, No. 1 Soft.....	16.10 to 16.35
Southern Coke, No. 2 Soft.....	15.35 to 15.85
Foundry Forge.....	14.35 to 14.85
Southern Gray Forge.....	13.85 to 14.35
Southern Mottled.....	13.35 to 13.85
Southern Charcoal Softeners, according to Silicon.....	18.85 to 19.85
Alabama and Georgia Car Wheel.....	25.35 to 26.35
Malleable Bessemer.....	16.50 to 16.75
Standard Bessemer.....	16.75 to 17.00
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon.....	19.30 to 21.30

Bars.—Orders for Bar Iron have been confined to small lots for quick shipment, the largest buyers that were in the market having withdrawn, at least temporarily. Sales have continued to be mainly on the basis of 1.50c. to 1.55c., Chicago, the inside prices for desirable specifications, but in some instances 1.60c. has been asked and obtained. The specifications for Soft Steel Bars have been moderate, and new business has been light, but prices have been maintained at the official schedule. The following are the prices current, f.o.b. cars, Chicago, mill shipment: Bar Iron, 1.50c. to 1.60c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.06½c. to 2.16½c.; Bessemer Bands, 1.76½c. to 1.86½c.; Angles, under 3 inches, 1.86½c. to 1.91½c., base. The moderate demand for jobbing lots to be shipped from local stocks has been freely met on the basis of previous prices. Bars selling at 1.90c. in carload lots and 2c. to 2.10c. in less than carload lots. Soft Steel Bars sell at 2c. rates; Angles, under 3 inches, 2.10c. rates, and Hoops, 2.40c., base, from store.

Structural Material.—The C. H. & D. Railroad is said to have placed an order for one bridge, and several contracts for highway bridges have been closed, but the aggregate tonnage has been very moderate. There are a number of small contracts for buildings coming up, but in general the market is quiet. But there has been no disposition to shade prices, the following being the official quotations for mill shipment, Chicago: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Univer-

sal Plates, 2c. to 2.25c. The light demand for shipment from local stocks has been readily met at previous prices, which are as follows: Beams and Channels, 2.10c. to 2.25c.; Angles, 2.10c. to 2.25c.; Tees, 2.15c. to 2.30c., from local yards.

Plates.—The general situation has shown little change, specifications on old contracts coming forward slowly and new business being light, but prices are maintained as previously quoted, f.o.b. cars, Chicago, mill shipment, as follows: Tank Steel, ¼ inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.15c.; Marine, 1.95c. to 2.10c. The few orders being received for shipment from local stocks are readily filled on the basis of the following prices: Steel, ¼ inch and heavier, 2c. to 2.15c.; Tank Steel, 3-16 inch, 2.10c. to 2.25c.; No. 8, 2.15c. to 2.30c.; No. 10, 2.30c. to 2.40c.; Flange Steel, 2.25c. to 2.40c., all f.o.b. warehouse, Chicago.

Sheets.—While a number of manufacturers are inquiring, there is still much hesitancy in placing of orders because of the general weakness in the market. A few sales have been made on the basis of 2.60c. for No. 28, but the majority of the sales continue to be made on the basis of the following prices, f.o.b. cars, Chicago, mill shipment: No. 10, 1.96½c. to 2.06½c.; No. 12, 2.06½c. to 2.16½c.; No. 14, 2.16½c. to 2.26½c.; No. 16, 2.26½c. to 2.36½c.; Nos. 18 and 20, 2.41½c. to 2.51½c.; Nos. 22 and 24, 2.51½c. to 2.61½c.; No. 26, 2.61½c. to 2.71½c.; No. 27, 2.71½c. to 2.81½c.; No. 28, 2.81½c. to 2.91½c. Small lots for shipment from local stocks are sold at from 10c. to 15c. over mill prices. Galvanized Sheets have been in moderate demand and steady at 75, 10 and 2½ to 75, 10 and 5 discount, mill shipment. Small lots from store are held at 75 and 2½ to 75 and 5 discount.

Cast Iron Pipe.—Business has continued to be confined to moderate amounts, mainly of small sizes for renewals by water and gas companies, there being little demand for extensions at this time of year. Railroad companies are also buying moderate amounts of Culvert Pipe, and the market continues easy, with the small orders being received filled at the following prices, f.o.b. cars, Chicago: 4-inch, \$30; 6-inch and larger, \$29, in carload lots, for Water, and \$1 per ton higher for Gas Pipe.

Billets.—The demand for Billets of all kinds has been light, and prices little better than nominal at \$28, Chicago, for Rerolling Bessemer and Open Hearth, while jobbing lots of Open Hearth Forging Billets have been sold at \$30 to \$32 in carload lots.

Merchant Pipe.—Larger orders have been placed for small medium sizes during the week, there being some buying for stock but mainly for present distribution. Mills are making satisfactory shipments on medium sizes, but are still many weeks behind in filling of contracts for larger sizes. The tone of the market has remained firm, sales being made on the basis of the following schedule of discounts in carload lots, base, random lengths, mill shipment:

Guaranteed Wrought				
Steel Pipe.	Iron	Black.	Galvd.	Black.
		Per cent.	Per cent.	Per cent.
1/4 to 3/8 inch.....	66.35	56.35	63.35	53.35
1/2 inch.....	68.35	58.35	65.35	55.35
3/4 to 6 inches.....	73.35	63.35	70.35	60.35
7/8 to 12 inches.....	67.35	57.35	64.35	54.35
Less than carloads, 12½ per cent. advance.				

Boiler Tubes.—The situation is unchanged, the mills being well booked and busy on previous contracts, and new business coming forward to maintain this activity, the market remaining steady at the following schedule of discounts, mill shipment, f.o.b. cars, Chicago:

1 to 1½ inches.....	40	35
1½ to 2½ inches.....	55.85	35.85
2½ to 5 inches.....	60.85	45.85
6 inches and larger.....	55.85	35.85

Less than carloads, 12½ per cent. advance.

Local distributors have continued to gather a number of small orders, which in the aggregate are considerable, the market remaining steady at the following schedule of discounts for shipment from local warehouse:

1 to 1½ inches.....	40	35
1½ to 2½ inches.....	50	32½
2½ to 5 inches.....	57½	42½
6 inches and larger.....	50	..

Merchant Steel.—Quite a number of small orders for agricultural Steel continue to be received, the aggregate tonnage being fair relatively, but the mills, of course, have capacity for a considerably larger business. In addition to the Steel noted in the following list there is a good inquiry for Plow Beams, Harrow Teeth, Disks and Soft Center Steel, the latter being sold at 4c. There is a moderate inquiry for Tool Steel, but no special animation. The following are the official prices, f.o.b. cars, Chicago, mill shipment: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 8c. for mill shipment; Specials, 12c. upward. Cold Rolled Shafting in carload lots sells at 47 and in less than carload lots at 42 discount from list.

Rails and Track Supplies.—While there has been considerable inquiry for Rails, both Standard and Light Sections, very little business has been closed. One inquiry is for 10,000 to 15,000 tons for Coal roads in Indiana, and another 15,000 to 20,000 tons for an electrical railway. There is still active competition for Light Rails, but prices for Standard are firm at \$28 for first and \$27 for second quality, mill shipment. Light Rails are sold at \$28 to \$32 for 30 and 12 lbs. at the mill. Track supplies are moderately active and steady at the following prices: Splice or Angle Bars, 2c. to 2.10c.; Spikes, 2.10c. to 2.15c.; Track Bolts, 3½ to 3¾ inches and larger, with Square Nuts, 2.85c. to 2.90c.; with Hexagon Nuts, 3c. to 3.10c. From store 10c. to 15c. over mill prices are asked and obtained.

Old Material.—The market has continued heavy with free offerings and but little demand either from mills or furnaces, but there has been less pressure to sell Forge grades, Turnings and Malleable Iron. Relaying Rails are difficult to sell even at quotations. Prices are further revised, the following being the approximate quotations per gross ton f.o.b. cars, Chicago:

Old Iron Rails	\$17.00 to \$18.00
Old Steel Rails, mixed lengths	14.00 to 14.50
Old Steel Rails, long lengths	15.50 to 16.50
Heavy Relaying Rails	21.00 to 22.00
Old Car Wheels	18.00 to 18.50
Heavy Melting Steel Scrap	13.00 to 13.50
Mixed Steel	12.00 to 12.50

The following quotations are per net ton:

Iron Fish Plates	\$14.50 to \$15.00
Iron Car Axles	19.00 to 19.50
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	13.50 to 14.00
No. 2 Railroad Wrought	12.50 to 13.00
Shafting	16.00 to 16.50
No. 1 Dealers' Forge	12.00 to 12.50
No. 1 Busheling and Wrought Pipe	10.50 to 11.00
Iron Axle Turnings	10.00 to 10.50
Soft Steel Axle Turnings	10.00 to 10.50
Machine Shop Turnings	10.00 to 10.50
Cast Borings	5.50 to 6.00
Mixed Borings, &c.	5.50 to 6.00
No. 1 Boilers, cut	11.50 to 12.00
Heavy Cast Scrap	12.00 to 12.50
Stove Plate and Light Cast Scrap	10.00 to 10.50
Railroad Malleable	13.50 to 14.00
Agricultural Malleable	12.50 to 13.00

Metals.—Copper has continued weak and prices have suffered a further decline with only moderate demand at the lower prices current. Casting copper is held at 13½c. and Lake at 13¾c. in carload lots. Spelter has been moderately active and easier in tone at 5.55c. to 5.60c. for spot and 5.50c. for October delivery. Lead has continued firm without change in general conditions, the supply available being light. The market remains firm at 4.35c. in 50-ton lots and 4.37½c. in carload lots. Old Metals have continued slow and easy, resulting in a moderate decline. Heavy Cut Copper is offered at 12c.; Copper Bottoms at 10¾c.; Red Brass at 11c. Lead Pipe has continued firm at 4c., and Zinc at 4½c., spot.

Coke.—The supply of all kinds of Coke at the ovens is large, but with a continued difficulty in making shipments because of lack of cars the market is better maintained. There is a fair demand for early shipment and some contracts for long delivery have been placed. Among the larger sales were 300 cars of Standard Furnace Coke at \$2 and 10,000 tons at \$2.10 at the ovens. Sales of Connellsburg, Pocahontas and New River 72-hour Foundry Coke have been made mainly at \$2.75 to \$3.25 and Furnace Coke at \$1.90 to \$2.25 at the ovens, freight Chicago \$2.65.

E. L. Vogel, long connected with the Charles Munson Belting Company, Chicago, and more recently with the Allis-Chalmers Company, has been appointed special agent of the Graton & Knight Mfg. Company of Worcester, Mass., manufacturers of Oak Bark Tanned Leather Belting. Mr. Vogel has established himself at 54 and 56 South Canal street, Chicago.

Philadelphia.

FORREST BUILDING, September 29, 1903.

The past week has developed some interesting features, the most important being the decision to reduce the output of Pig Iron to the extent of 20 per cent., to commence October 1. This movement should be of immediate benefit to the Pig Iron trade. It will not advance prices, but it will lessen the chances of further decline and do much to establish a basis of prices which will restore confidence, without which there can be no stability. Unsettled conditions have, in fact, developed something approaching demoralization, so that this prompt and timely action by Pig Iron manufacturers should have excellent results. For the present, however, the situation is rather a tentative one, and it will require time to show to what extent this 20 per cent. reduction will help the market, assuming that the scheme will become effective as proposed. Apart from that, there is little that can be said at the present time. There have been a good many inquiries for Pig Iron and fairly large sales, and those who have options at low figures will be likely to take them up in view of the proposed decrease

in production. The unsettled conditions in Wall street may, however, have a good deal of influence in determining the course of the Iron market. Less favorable conditions in that direction would be very likely to prevent improvement in Iron and might cause further depression, while a turn for the better, which everybody hopes for, would be extremely helpful at this juncture. It will be seen, therefore, that while protective measures have been taken in regard to the Pig Iron interests, it is impossible to say to what extent it will lead to a recovery, as influences apart from the Iron Trade may affect the market, but the action of the makers of Pig Iron is both timely and judicious.

Pig Iron.—Owing to the proposed curtailment in the production of Pig Iron it is difficult to say anything definite in regard to prices. Presumably they will be held at about last week's figures, as no further decline is expected pending a decreased output. Those who have options at low figures will be likely to avail themselves of any advantage which they may offer; others will, no doubt, wait to see how the scheme will work out, so that on the whole there is no reason to expect anything but a steady market for such quantities as may be required for use during the next 60 to 90 days. Most of the contracts made during the early portion of the year (and some from last year) are pretty well completed, so that there should be a considerable demand to keep things moving, although it is hardly likely that engagements for long deliveries will be ventured on until it is seen what the outcome of the Wall Street flurry will be. Better conditions in the market for securities would be extremely helpful to the Iron trade as general conditions appear to be favorable, and all that is needed for a substantial recovery in Iron and Steel is confidence and easy money. Meanwhile prices are about as follows for Philadelphia or nearby deliveries, but as already stated, the market is a little irregular, prices depending a good deal on the circumstances in each individual case. No. 2 X Foundry is scarce and is therefore relatively stronger than the other grades.

No. 1 X Foundry	\$17.00 to \$17.50
No. 2 X Foundry	15.75 to 16.50
No. 2 Plain	14.75 to 15.25
Standard Gray Forge	14.25 to 15.00
Basic	14.75 to 15.00
Low Phosphorus	21.00 to 22.00

Steel.—There is not enough business doing to establish prices, but asking figures are a little less than \$28, delivered, for ordinary sized lots of Basic Steel. Foreign in 1000-ton lots and upward is offered at about \$26.50, ex-ship, but there is no disposition to do business except in a small hand to mouth way, price being no inducement, except to those who are likely to need Steel in the immediate future.

Plates.—Business is dull, and prospects for a resumption of demand on a large scale are not encouraging at the present time. Large consumers, such as ship and car builders and boiler makers, are getting very few orders, comparatively speaking, so that the mills can make prompt deliveries when required to do so. Prices are unchanged at the following figures for city and nearby deliveries, base prices up to 100 inches: Tank Steel, both Sheared and Universal, 1.75c. to 1.80c. in large lots; Flange, 1.85c. to 1.90c.; Commercial Fire Box, 1.95c. to 2c.; Locomotive Fire Box, 2.25c. to 2.30c.; small lots, 10c. to 15c. per 100 extra; 100 to 110 inches, 0.05c. extra; 110 to 115 inches, 0.10c. extra; 115 to 120 inches, 0.15c. extra; 120 to 125 inches, 0.25c. extra; 125 to 130 inches, 0.50c. extra; over 130 inches wide, 1c. extra; Plates under ¼ inch on edge, 0.10c. extra; under 3-16 inch on edge to No. 8, 0.15c. extra; No. 9, B. W. G., 0.25c. extra; all Sketch Plates, 0.1c. extra; all Circle Plates, 0.2c. extra.

Structural Material.—There is a slightly better demand, but the tonnage is much below what it was during the earlier portion of the year, and it is not likely to be much better in the near future. The attitude and action of labor are particularly hostile to this interest, which would be in good condition were it not for the destructive influence of men who would be in jail if they got their deserts. Prices are unchanged—viz.: 1.73½c. to 1.85c. for Beams, Channels and Angles, according to specifications.

Bars.—The Bar trade, in sympathy with the generally unsettled conditions, is extremely dull, but prices are pretty well maintained at about 1.60c. delivered for Best Refined Iron. Bars can be had at 1.50c., but guaranteed quality cannot be had much if anything below the full figure above named. Steel Bars dull, but steady at 1.73½c. to 1.75c.

Sheets.—Market dull and unchanged, although on good sized orders liberal terms can be arranged.

Old Material.—Business is practically dead as there is no general demand. Buyers are unwilling to make bids except for such stock as they require for immediate use, sales being made at about the following figures, bids and offers for deliveries in buyers' yards being about as follows:

Old Steel Rails	\$15.00 to \$15.50
Heavy Steel Scrap	14.75 to 15.25
Low Phosphorus Scrap	22.00 to 23.00
Old Steel Axles	18.00 to 19.00
Old Iron Rails	18.00 to 19.00
Old Iron Axles	19.00 to 20.00
Old Car Wheels	16.50 to 17.00
Choice Scrap, R. R. No. 1 Wrought	17.00 to 17.50

Country Scrap.....	14.00 to	15.00
Machinery Scrap.....	14.50 to	15.00
No. 2 Light Scrap.....	13.50 to	14.00
No. 2 Light (Ordinary).....	10.00 to	11.00
Wrought Turnings.....	10.50 to	11.00
Wrought Turnings, Choice Heavy.....	11.50 to	12.00
Cast Borings.....	7.25 to	7.75
Stove Plate.....	11.50 to	12.00

R. M. Baily & Co., Iron, Steel and supply merchants, have opened offices in the Arcade Building, Rooms 402, 404, 406, Philadelphia, Pa. Mr. Baily was formerly of Worth, Baily & Co., recently dissolved by limitation. Among the various lines represented by the new firm are the Tyler Tube & Pipe Company, Washington, Pa.; the Industrial Works, Bay City, Mich.; La Belle Iron Works, Steubenville, Ohio; the Arlington Mfg. Company, Canton, Ohio, and the Universal Safety Tread Company of New York.

Cleveland.

CLEVELAND, OHIO, September 29, 1903.

Iron Ore.—Owing to the peculiar terms of the settlement of the lake labor difficulty, it has been said that reprisal will be practiced by some of the Ore shipping interests, especially the Steel Corporation, against the independent vessel interests who refused to stand by the terms of the vessel owners' compact. The independent vesselmen suggested that if the Ore shippers could not run their own boats and needed Ore carried very badly, it could be done at an advance of 20c. a ton. The report has been that since all of the boats are in service and since there is an evident surplus of tonnage on the lakes the shippers will exert their power and cause a material reduction in lake freights. This, however, is not expected just now, although it is admitted that there may be action of this sort later on. Meanwhile the movement of Ore down the lakes is again very heavy, and the shipment is proceeding at about the pace which prevailed last year, which will make it easy to duplicate the total figures of 1902, bringing the shipment for the season up to 27,000,000 tons. Nothing is being heard of possible Ore sales, although it is said that some small contracts are being talked of quietly, upon which it may be possible to get Ore at a reduction. The lake rates continue to be 80c. from the head of the lakes, 72½c. from Marquette and 60c. from Escanaba. The Ore prices hold nominally at least at \$4.50 for Bessemer Old Range and \$4 for Bessemer Mesaba.

Pig Iron.—It is now quite evident that the blast furnaces working on Foundry Iron in this territory will restrict production during the fourth quarter. A meeting is being held at Pittsburgh to-day to take up that matter. The estimated curtailment of the supply is 1,000,000 tons. Meanwhile the buying of Pig Iron of the Foundry grade continues in small lots as heretofore. Those who want material give orders for what they need immediately and ask quick shipment upon it, there being nothing approaching advanced buying just now. The Northern furnaces are asking \$15 in the Valleys for No. 2 Foundry, while the Southern Association stacks ask \$11.75 to \$12, Birmingham, for No. 2 Foundry. The assurance that present prices will prevail only causes the inquiry to disappear, as consumers seem to believe that better prices will be made before the quarter is past. The new Cleveland furnace will change over from Bessemer to Foundry Iron this week. Reports have been abroad again of further inquiries for Basic Iron for fourth quarter delivery. It seems that the available supply is not large, and any such reports are discredited when they appear. It is known that a few small inquiries have appeared, but they have no significance. The price holds nominally at \$16 in the Valleys for fourth quarter delivery. The fact that one of the furnaces running on Bessemer changed over to Foundry indicates the conditions prevailing in that trade. The market has been extremely dull and listless, and no inquiries have appeared even from the Steel Corporation. The time when sales will be made seems remote. The price is purely nominal at \$16 in the Valleys for fourth quarter delivery. The supply of Coke is abundant and prices are easing up considerably. Good 72-hour Foundry Coke is now held at about \$3 at the oven, other prices being scaled on that figure.

Finished Iron and Steel.—Iron prices have steadied a little during the week, and while Steel has been weaker than of late there have been no noticed tendencies to break the prices despite rumors to the contrary. The buyers have been expecting such declines and have held off for the time being, buying only hand to mouth. The indications are that as soon as the market has steadied a little and it has been established that there are to be no cuts in prices the whole market will take a brace and a buying movement of some importance start. In Bar Iron the buying is in small lots, but more orders seem to be appearing. Some interests are holding for 1.50c. at the mill, but it is evident that the market is represented by 1.45c. at the mill. The buying of Steel Bars has eased up. During the past few weeks order booking in this territory has aggregated about 10,000 tons, deliveries covering a period of a year ahead. The price has held firm at 1.60c., Pittsburgh, for Bessemer, and 1.70c., Pittsburgh, for Open Hearth. In Sheets there has been but little busi-

ness. The larger mills have lost such an amount of tonnage by the operations of the smaller mills at cut prices that talk has been indulged in quite freely of a general reduction in the association quotations that the opposition may be met. So far the association has made no reduction. Nominally prices are about 3.05c. for No. 27 Black Sheets out of stock; 2.20c. for No. 14 Blue Annealed in car lots at the mill; 2.75c. for No. 27 One Pass Cold Rolled in car lots at the mill, and 4c. for No. 27 Galvanized Sheets out of stock. In Plates there has been a little better general buying of late. The consumers are covering only their immediate needs and some of them are working on a pretty close margin. They take on a supply equal to their needs for a few weeks at the outside, and then replenish their stock when necessary by orders for quick shipment. It is evident, however, that there is enough business in sight to warrant the assumption that when the present uncertainty as to prices is past the buying movement will be satisfactory. The price holds at 1.60c., Pittsburgh. About the same conditions prevail in the structural trade, which if anything is a little weaker. The mills need business but the price is upheld, being 1.60c., Pittsburgh. The jobbers are doing nothing, but hold their prices to 2.15c. out of stock. The smaller Sheet mills are buying some Billets, because they are having a fair trade. The price holds \$27.50 for 4 x 4 Bessemer. A good sized rail contract appeared in this territory this week and will be closed soon.

Old Material.—The Scrap market is dull and listless, and each day sees a further reduction in prices in the hope of bringing out some business. The quotations, revised, are as follows, all gross tons: Heavy Melting Steel, \$16; Old Steel Rails, \$17; Old Iron Rails, \$20; Old Car Wheels, \$19; Railroad Malleable, \$15; Cast Borings, \$7. All net tons: No. 1 Railroad Wrought, \$15; No. 1 Busheling, \$13 to \$13.50; Wrought Turnings, \$10.50; Iron Car Axles, \$22.50; No. 1 Cast Scrap, \$14; Stove Plate, \$11.

Cincinnati.

FIFTH AND MAIN STS., September 30, 1903—(By Telegraph.)

Probably the most difficult proposition in reporting the Pig Iron market at this time is to state just what Foundry brands are actually worth. Ideas are at variance, and considerable doubt exists as to what should be the correct quotations. As for business, there is but little of it going. On the same general plane in which the market has hung for some time, buyers don't seem to want the Iron at any price, and when a low figure is offered them they immediately respond by seeing how much lower it could be bought at, though many times with but little evident determination to buy at all. What buying there is is still on the hand to mouth order, and the total volume is not satisfactory at all when viewed from a seller's standpoint. Northern No. 2 is quoted in the offices here as having been sold in Pittsburgh for a little less than \$15, delivered there. On this basis, of course, the Southern article has no show of competition. The Southern association still holds to its plan of asking \$11.75 for No. 2 Foundry, Birmingham, basis, but they are selling Iron on a Silicon analysis, which undoubtedly means at least 50c. lower than that figure. There are reports that No. 2 Southern Foundry has been sold on the basis of \$11, Birmingham, but no seller is found willing to admit having made such sales. The outlook is still for a quiet, unsatisfactory market. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

Southern Coke, No. 1.....	\$15.00 to \$15.75
Southern Coke, No. 2.....	14.50 to 15.25
Southern Coke, No. 3.....	14.00 to 14.75
Southern Coke, No. 4.....	13.50 to 14.25
Southern Coke, No. 1 Soft.....	15.00 to 15.75
Southern Coke, No. 2 Soft.....	14.50 to 15.25
Southern Coke, Gray Forge.....	13.25 to 14.25
Southern Coke, Mottled.....	13.25 to 14.25
Ohio Sl'vry, No. 1.....	19.15 to 19.65
Lake Superior Coke, No. 1.....	16.15 to 16.65
Lake Superior Coke, No. 2.....	15.65 to 16.15
Lake Superior Coke, No. 3.....	15.15 to 15.65

Car Wheel and Malleable Irons.

Standard Southern Car Wheel..... \$25.00 to \$25.75
Lake Superior Car Wheel and Malleable 21.00 to 22.00

Old Material.—The market is dull and the quotations given herewith, while possibly not as accurate as they could be made under some circumstances, are nevertheless approximately so: No. 1 Wrought Iron Railroad Scrap, \$13.50, per net ton; Cast Scrap, \$12.50, per gross ton; Iron Rails, long, \$20, gross; Steel Rails, long, \$17, gross; Iron Axles, \$20, net; Car Wheels, \$20.50, gross; Heavy Melting Scrap, \$13, gross; Low Phosphorus Scrap, \$18 to \$18.50, gross. The above quotations are dealers' buying prices, f.o.b. Cincinnati.

Plates and Bars.—Iron Bars, in carload lots, 1.55c., with half extras; same in small lots, 2.20c., with full extras; Steel Bars, carload lots, 1.73c., base; same in small lots, 2c.; Angles, base, 1.70c.; Plates, 1.70c., base.

Pittsburgh.

PARK BUILDING, September 30, 1903.—(*By Telegraph.*)

Pig Iron.—A fully attended meeting of blast furnace operators of the Pittsburgh, Wheeling, Cleveland, Valley and Columbus districts was held in the board room of the Carnegie Steel Company at 1 p.m. on Tuesday, September 29. The present unsatisfactory condition of the Pig Iron trade, compelling heavy stocks to be piled up by the furnaces, was carefully gone over, and it was decided that a shutdown of a sufficient number of furnaces to take surplus Iron out of the market was imperative. A committee was appointed for this purpose, consisting of J. G. Butler, Jr., of Youngstown, D. G. Kerr of Carnegie Steel Company, W. P. Snyder of Clairton Steel Company, D. B. Meacham of Rogers, Brown & Co. and A. W. Thompson of Republic Iron & Steel Company. This committee is now gathering the necessary data, and expects to hold a meeting on Friday, October 2. It is proposed to shut down a sufficient number of furnaces to take 25 per cent. of the present output of Pig Iron out of the market, and if the plan goes through these furnaces will be shut down at the earliest possible date. Blast furnace operators in the Ironton, Ohio, and Ashland, Ky., districts have been asked to co-operate. The present price of Bessemer Iron is \$15.50 to \$16, at Valley Furnace, but if a large consumer of Iron came in the market for a good tonnage and was prepared to take it out right away he might possibly do a little better. Forge Iron is about \$14.50, Pittsburgh, but there is very little moving. A local consumer of Foundry Iron is reported to have placed contracts in the last few days for about 4000 tons, about half of which is to come into the Pittsburgh district. Prices on this tonnage are said to have ranged from \$16.25 to \$16.60, the higher prices being for special grades.

Steel.—The Steel market continues extremely quiet and there is very little moving. Reports are going of several sales of Open Hearth Billets and Sheet Bars at 50c. to \$1 a ton under regular prices. Official prices of Bessemer Billets are \$27, Open Hearth, \$28, with \$1 a ton advance for Long Sheet Bars and \$1.50 a ton advance for Sheet Bars cut to length.

Merchant Pipe.—A meeting of the independent merchant Pipe mills was held in the Hotel Lincoln, Pittsburgh, on Tuesday afternoon, September 29. The present condition of the Pipe trade was gone over carefully and action was taken looking to the prevention of any demoralization in prices by return of dull demand for butt weld sizes. The outside Pipe mills are understood to be working very closely together.

(*By Mail.*)

At this writing a largely attended meeting of the blast furnace operators in the Central West, embracing Pittsburgh, Cleveland, Wheeling and the Valley districts, is in session in the Carnegie Building, in this city. A number of furnace operators from the East and South are also in attendance. The call for the meeting was sent out a few days ago and signed by J. G. Butler, chairman of the Bessemer Furnace Association, and is being held for the purpose of taking such action as, in the minds of the blast furnace owners, is necessary to regulate the Pig Iron market from the standpoint of production. The fact that there has been practically no demand for Pig Iron for the past month or more has caused heavy stocks to be piled up in the furnace yards, and it is realized that something will have to be done to keep these heavy stocks from getting larger and hanging over the market. While the meeting is still in session, it is the general opinion that a plan will be devised by which a number of furnaces in the above districts will close down for periods ranging from 30 days to six weeks. A meeting of the independent Pipe mills is also being held this (Tuesday) afternoon in the Hotel Lincoln, this city, and is well attended. The Pipe mill owners thought it best to get together and take some action to prevent any demoralization in prices of Pipe. The result of this meeting is unknown at this writing. The demoralization in the stock market in the past week has practically shut off business in the Iron and Steel trades, and very little has been done since our last report. The producers of material realize that it is useless to try to force their products on the market at this time until the situation clears. Consumers are not buying a pound of material beyond their actual needs, and in many cases refuse to buy altogether unless guaranteed against decline in prices. While the situation is far from encouraging, yet it is believed that with a material restriction in output of Pig Iron and more confidence on the part of buyers the market will soon show improvement. It is a well-known fact that stocks are lower to-day than in several years past, and jobbers have been steadily pulling on their stocks for some time. The situation to-day is a little more cheerful, owing to the decided turn in the stock market, and it is hoped that the worst of the depression is past. There has not been a sale of Bessemer Pig Iron of any size in this market for more than a week, and while \$15.50, at furnace, is generally quoted, there is no doubt but that \$15, or perhaps lower, at Valley furnace, has been done. Gray Forge Iron is nominally \$14.50, at Pittsburgh, but practically nothing doing. Northern No. 2 Foundry Iron is quoted at \$15.25 to \$15.50, with very little inquiry. In

Finished Iron and Steel demand is quiet, but it is a remarkable fact that prices have steadily held, except in a few instances, in the face of the dull demand and the refusal on the part of buyers to make any contracts.

Ferromanganese.—There is practically nothing doing, and we continue to quote English and domestic at 80 per cent., Ferro at \$48 to \$49, delivered. Were any large contracts in the market, it is not improbable our lower price would be shaded.

Steel Rails.—While no large contracts for Rails have been placed for some little time, it is believed the large railroads will soon come in the market and place their requirements for next year. There never was a time in the history of the railroads when their earnings were as large as at present, and if past history is to be followed, the railroads ought to make heavier purchases of Rails and other equipment than ever before. It is when railroads are making money that they spend it freely, and, as stated above, earnings are heavier than ever before. Standard Sections are quoted at \$28, at mill.

Structural Steel.—The contract for the Wabash train sheds in this city has been given to the Pennsylvania Steel Company, who will erect the buildings and furnish the material, about 3000 tons. There was only one bidder for the Blackwell's Island bridge, and this large job has been held up. Had it not been for the labor troubles and the tightening in the money market, building would have been more active at this time than ever before in the history of the country. A great many large jobs had been figured out in detail, and were ready to place when the labor troubles and tight money came up, and they have been dropped. The leading interests and a number of the larger shops are well filled up for the next two or three months, but large jobs are held back and the tonnage being placed is mostly small contracts. The Structural mills are making prompt deliveries, and with labor troubles out of the way and a better money market, the Structural trade would very quickly show improvement. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c.; half extras, at mill; Universal and Sheared Plates, 1.60c.

Muck Bar.—We quote standard grades of Muck Bar at \$27.50 to \$28, Pittsburgh, but there is practically no inquiry.

Iron and Steel.—Material concessions continue to be met in prices of Iron Bars, and they are being offered as low as 1.50c., Pittsburgh. Tonnage in both Iron and Steel Bars is confined to small lots, and the leading agricultural implement makers have not covered for more than 25 per cent. of their requirements for next year. Makers of Steel Bars continue to guarantee prices against decline, and if the general situation should improve, it is believed a heavy tonnage in Steel Bars would soon be placed with the mills. We quote Iron Bars at 1.50c., Pittsburgh, with the usual extras. We quote Steel Bars at 1.60c., Pittsburgh, in carloads and larger lots. For quantities less than 2000 lbs., but not less than 1000 lbs., \$2 a ton additional is charged, and less than 1000 lbs., \$6 additional.

Sheets.—Demand for Sheets continues quiet, but the tone of the market is fairly firm and there is no disposition being shown by the mills to market their product at lower prices. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.55c. to 2.60c., and No. 28 at 2.65c. to 2.70c., for carloads and larger lots. We quote Galvanized at 75, 10 and 2½ per cent. off, for ordinary specifications in carloads and larger lots. For very desirable specifications possibly a little lower price would be made by a few mills. Jobbers charge the usual advances over above prices for small lots.

Plates.—Tonnage in Plates does not show any improvement and orders being entered by the mills are mostly for small lots. The leading car companies have not very much work ahead and the works of the Pressed Steel Car Company in this city are shut down. This takes a very large tonnage of Plates and other shapes out of the market. In spite of the dull demand the leading mills will maintain prices on the present basis, which are as follows: Tank Plate, 1/4-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

Rods.—There is some inquiry from the Rod mills for Bessemer Rods, which we quote at \$34.50, and Open Hearth at \$35.50, Pittsburgh. On a nice specification it is probable our prices might be slightly shaded.

Hoops and Bands.—The Cotton Tie season will soon come, and in view of the heavy cotton crop this year it is believed demand will be larger than ever before. Tonnage in Hoops and Bands is for small lots only, but prices are fairly steady. We quote: Cotton Ties, 87c. in 10,000-bundle lots or over; 92c. for carloads; Steel Hoops, 1.90c.

in 250-ton lots and 2c. for carloads; Bessemer Bands, 1.60c. to 1.70c. for Open Hearth. Extras as per Steel card.

Merchant Steel.—Reports show that stocks in jobbers' bands are lighter at this time than for years, and with a return of confidence it is believed demand would be very heavy. Tonnage in the past two or three weeks has shown some increase, and the leading interest reports their tonnage in August to have been 10 per cent. larger than in the same month last year. Prices are fairly steady, and we quote: Open Hearth Spring, 2.30c. to 2.40c., base; Toe Calk, 2.25c., base, half extras; Tire Steel, 1.80c. to 2c. for usual sizes; Plow Slabs, Bessemer, 2.25c.; Open Hearth, 2.50c.; Tool Steel, 6½c., base, and upward; Shafting, 42 per cent. off in less than carloads and 47 per cent. in carloads, delivered in base territory.

Spelter.—The market on Spelter continues firm, and there is some difficulty in getting prompt deliveries. For spot shipment prime Western Spelter is held at 5.78½c., and for future shipments 5.75c., Pittsburgh, is quoted.

Tin Plate.—In the past week some good sized contracts for Tin Plate have been placed, several of these ranging from 75,000 to 100,000 boxes each, for extended delivery. We understand that prices on Tin Plate for delivery ahead are guaranteed against decline. We quote at \$3.80, Pittsburgh, for 100-lb. Cokes, this being base price.

Skelp.—There is no demand for Skelp, and prices are merely nominal. We quote Grooved Iron and Steel Skelp at 1.55c. to 1.60c., and Sheared at 1.65c. to 1.70c., f.o.b. Pittsburgh.

Pipes and Tubes.—At this writing a meeting of the Pipe mills is being held in the Hotel Lincoln, in this city. It is for the purpose of discussing the present condition of the Pipe market, and to take action to prevent any demoralization in prices. There has been some unevenness in prices for small sizes of Pipe, but on 6-inch and larger prices are firm and the mills have a great deal of work ahead. Discounts to consumers in carloads are as follows:

	Steel.		Wrought Iron.	
	Black.	Galv.	Black.	Galv.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
5, 1/4 and 5/8 inch.	68	58	65	55
1/2 inch.	70	60	67	57
5/8 to 6 inches.	75	65	72	62
7 to 12 inches.	69	59	66	56

	Merchant Boiler Tubes.	Steel.	Iron.
1 to 1½ inches.		42½	39
1½ to 2½ inches.		55½	38
2½ to 5 inches.		61	48
6 to 13 inches.		55½	38

We may note, however, that on the smaller sizes of both Iron and Steel Pipe some of the outside mills are slightly shading these discounts.

Iron and Steel Scrap.—We do not hear of any sales of Scrap, except an odd lot occasionally at sacrifice prices, and in this condition of the market it is useless to make quotations. No. 1 Wrought Scrap for prompt shipment has been offered at \$14.50 in net tons or lower. Heavy Melting Stock can readily be bought at \$16, and this price has been shaded for some forced sales. Cast Iron Borings have sold at \$7 a ton, and prices on the whole line of Scrap depend largely on conditions surrounding the sale.

Coke.—A car shortage is looming up in the Coke fields, and has interfered somewhat with shipments in the past week. The contemplated shut down of a number of blast furnaces will interfere very considerably with demand for Furnace Coke. Strictly Connellsville Furnace Coke is offered for prompt shipment at \$2 to \$2.10, at oven, while 72-hour Foundry is pretty firmly held at about \$3, at oven. Outside makes of Coke are offered as low as \$1.50 a ton for Furnace and \$2.25 to \$2.50 a ton for Foundry. Output last week fell off very much, and for the Upper and Lower Connellsville regions was about 300,000 tons, a material decrease over the previous week. Shipments also fell off largely on account of shortage of cars and dull demand.

Birmingham.

BIRMINGHAM, ALA., September 21, 1903.

There is very little in the Iron market calling for special comment. The demand is only moderate, and the same condition as to prompt shipment prevails as has heretofore been reported. Prompt shipment is a condition precedent to purchases. At the present time there is nothing in the way of preventing them, and this means that current business is being cared for. A month ahead in point of delivery is as far as buyers care to go in placing time orders. A few lots of 100 to 500 tons were placed the past week, and one or two cases are noted where orders were placed for larger lots. But the bulk of the business was in 500-ton lots and less. Prices have been kept on a pretty even keel, and association prices, based on \$12 for No. 2 Foundry, have prevailed as a rule.

A good deal of talk is heard about the probability of lower prices, and the very moderate amounts taken by buy-

ers give color to the reports that they will not load up at present values. This brings up probable action of the railroads as to lowered freight rates, about which no action has yet been taken. But the matter is being agitated and is under advisement, with nothing in sight yet upon which to predicate a statement as to probable action. The course of the market, and, in one sense, the fate of the market, is in the hands of the railroads. If they continue firm in their present attitude and refuse to come to the rescue of the market by lowering the existing freight rate, there is nothing left for the furnaces but to accept such values as may be offered. The piling up of Iron at prevailing cost is anything but encouraging to the profit side of the business. Prices have been fairly maintained on the theory that the various railroads would come to the assistance of the market by making the freight at a figure that would move out the Iron. At prevailing prices some furnaces are mighty near the danger line as to profits, and if values are forced lower, it means a closing down of some furnaces and a consequent reduction of tonnage for the roads. As to the feeling among the holders of Iron here, it is mixed. The largest and strongest holder of Iron is not without faith that the market will right itself in time, and that the action of the railroads will be the lever that will help the market to its feet.

Just at this point it may not be inadvertent to again give warning as to the probable shortage of cars a little later on. The subject has been mentioned in previous letters and is mentioned again because of multiplying evidences that we are not far from the time when complaints about shortage of cars will be acute and frequent. One large shipper of Coal states that his company lost orders for 17,000 tons of late because of inability to obtain the necessary cars. It's a case of coming events casting their shadows before. This condition confronting us in the near future is not pleasant for contemplation by the holders of Iron, and it is discouraging to those makers whose policy has been prompt sales and quick returns.

As to sales, one can say they are irregular and do no violence to the truth. Some have sold on the basis of \$12 for No. 2 Foundry in moderate and small sized lots, while others obtained \$11.50 and \$11.25, and it is asserted that some buyers were fortunate enough to get in at \$11. There is more or less selling of Iron that won't stand the test for first-class production, being just enough off to reject it as to grade, but still good enough to answer for certain uses. In such cases the grade price has been shaded and the sale heralded as regular grade.

The outside furnaces are paying very little attention to the combination further than to shade their values sufficiently to take what business they can handle. But this is limited, and if they get caught short on any contract they have to pay full association prices to fill in. This makes them careful as to sales and restricts volume of business. The differential in favor of prices for seaboard points has not led to any material increase in the business with Atlantic buying points, and it has at the same time created dissatisfaction in other buying sections. We are getting credit for making some sales that should be credited to some of our competitors, and it all arises from the fact that the sale is reported on Birmingham basis. The natural inference would be that it was Birmingham Iron.

There have been persistent rumors concerning changes that are imminent in the management of the leading interest here, and your correspondent has been at particular pains in endeavoring to ascertain their correctness. They come from usually well informed sources, and they are common gossip in Iron circles. Inquiry at primal sources brought forth a strong denial of their truth, and there the matter rests. If there be no foundation for them, severe condemnation should be meted out to those who set the tongue to wagging.

As evidence that that general business is in good condition, the report of the car service association shows that they handled during the month of August 55,087 cars, as against 49,114 for the corresponding month of last year. Our bank clearings and deposits continue to show a gratifying increase, while business in all lines shows a most marked improvement. The various shops are in good condition as to orders, and while there is a lull for the time being in fresh orders, there is no misgiving as to continued activity.

As to Coal, the demand is very good, and many dealers are taking time by the forelock and placing their orders in anticipation of the period when car shortage will block prompt shipment. The price is a good deal like that of Iron, and runs from \$1.30 to \$1.70, depending upon the character of the Coal. These are prices at the mine.

In Coke, the supply is on the constant increase, and the price varies from \$3.25 to \$3.50. It is hardly probable that we will be compelled hereafter to seek outside our district for our supply of Coke.

The Trussville Furnace, so long out of blast for repairs and enlargement, will blow in on the 5th of next month.

Mining operations are now being pushed with good results, and furnace bins are being stocked preparatory to the bad spells of weather ahead of us; but the lack of labor limits output.

Some few small companies filed articles of incorporation during the week, but they were of no significance.

Some interest is being manifested in the gold fields, and there are some fine promises on the Tallapoosa River, in Talladega County, where the free milling gold runs from \$2 to \$10 per ton, and the estimated earth holding it, on one property, is by accepted authority placed at \$50,000,000 cubic yards. The same prospects that exist here would, in such gold mining States as Colorado, excite interest and investigation and lead to development. This industry is as yet in its infancy in this section, and attention is called to it because of the possibilities it offers to the intelligent and co-operative use of practical experience and capital.

(By Telegraph.)

BIRMINGHAM, ALA., September 30, 1903.

The Southern Iron Committee is called to meet in New York on Thursday of this week, when the question of 50c. reduction in freight rate on Iron will be again considered, with indications of its being granted. This action is a necessary precursor to any activity in the market. Some furnaces are taking initial measures to close down, and others will follow suit should the petition for relief not be granted. There is no change in quotations, and our Western trade is rather slow on the basis of \$11.50 to \$11.75 for No. 2 Foundry. The \$1 differential in favor of Atlantic Coast buying points has induced some trade, which is registered on a basis of \$10.75 for No. 2 Foundry. Quick and favorable action of the Iron Committee is necessary to move our surplus Iron before scarcity of cars will prevent or delay shipment. The fate of the market is in their hands.

New York.

NEW YORK, September 30, 1903.

Pig Iron.—Orders for small lots for immediate shipment are numerous, and several contracts for round quantities have been closed. Southern Iron has been sold a little more heavily in this territory. The future of this market depends upon two contingencies: One of these is the expected action of the Northern furnacemen in reducing their output of Pig Iron 20 per cent., and the other is the possibility of a reduction in freight rates on Southern Iron for Northern markets. If the freight rate is reduced on Southern Iron this would probably mean a reduction in the delivered price. Relief would thus be afforded to Southern furnace companies, but it would be at the expense of Northern business—at least temporarily. On the other hand, reduced output of Northern furnaces would cut down the offerings and remove the fear of continued lowering of prices. We quote at tidewater: No. 2 X Foundry, \$15.75 to \$16.75; No. 2 Plain Foundry, \$15.25 to \$16.25; Gray Forge, \$14.75 to \$15.75; Basic, \$15 to \$16. Tennessee and Alabama brands, \$16.25 to \$16.50 for No. 1; \$15.25 to \$16.25 for No. 2, and \$14.75 to \$15.75 for No. 3.

Cast Iron Pipe.—Manufacturers report continued orders for small lots. Prices on carload lots of 6 to 10 inch are \$31.50 to \$32 per gross ton at tidewater, and 12-inch upward \$31.

Steel Rails.—Small lots of standard sections constitute about the only business coming up in this branch of the market. Railroad companies who have not yet covered their requirements for next year are apparently in no hurry to close, but await developments, being presumably influenced by conditions in the securities market. Prices are firmly held at \$28, Eastern mill. Quite a good volume of business is reported in light sections, which are selling at \$30 to \$32, at mill. Some business is being taken for export in Light Rails.

Finished Iron and Steel.—Very much to the surprise of all concerned, the only bidder on the Blackwell's Island Bridge was the Pennsylvania Steel Company. Their bid was considerably above the appropriation. It is stated that the specifications will be modified in some respects, to make the proposition more attractive, and new bids will be asked. The Pennsylvania Steel Company have been awarded the contract for the building of the Wabash train sheds at Pittsburgh, which will require about 3000 tons of Steel. General business in the structural line is quite light. Expected buyers are holding off, waiting for the clearing of the labor and financial situation. Many building projects contemplated in this city are reported to have been indefinitely postponed on account of the continued unsatisfactory condition of labor. Business in other lines of finished products is quite light, but prices are maintained, except on Bar Iron, which is weaker. Quotations are current of 1.40c. at mill, on Bar Iron, but in such instances doubt prevails as to the quality. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates, in carload lots, are 1.78c. to 1.85c. for Tank, 2c. to 2.10c. for Flange, 2.10c. to 2.20c. for Marine and 2.25c. upward for Fire Box. Refined Bars are 1.60c. to 1.80c.; Soft Steel Bars, 1.70c. to 1.80c.

Old Material.—Some transactions are reported, but in

nearly every case special prices have been made, according to the needs of the seller and the character of the material offered. No general disposition is yet shown among consumers to stock up, notwithstanding the exceedingly low prices. Large lots of Relaying Steel Rails are being offered, but the demand is very limited. Quotations are nominal, with approximate figures as follows per gross ton, New York and vicinity:

Old Iron Rails	.....	\$17.50 to \$18.00
Old Steel Rails, long lengths	.....	17.00 to 17.50
Old Steel Rails, short pieces	.....	14.00 to 15.00
Relying Rails, heavy sections	.....	22.00 to 23.00
Old Car Wheels	.....	15.75 to 16.25
Old Iron Car Axles	.....	19.00 to 20.00
Old Steel Car Axles	.....	18.00 to 18.50
Heavy Melting Steel Scrap	.....	14.00 to 15.00
No. 1 Railroad Wrought Iron	.....	16.00 to 17.00
Iron Track Scrap	.....	15.50 to 16.00
Wrought Pipe	.....	11.00 to 11.50
Ordinary Light Iron	.....	8.00 to 8.50
Cast Borings	.....	6.00 to 7.00
Wrought Turnings	.....	10.00 to 10.50
No. 1 Machinery Cast	.....	12.50 to 13.00
Stove Plate	.....	8.00 to 8.50

George A. Enell, Iron and Steel, has moved his office from 29 Broadway to the Flat Iron Building, Twenty-third street and Broadway, New York. Mr. Enell has been engaged in the Iron business for a great many years. For 20 years he was identified with the old firm of A. R. Whitney & Co.

The New York Machinery Market.

NEW YORK, September 30, 1903.

Machinery merchants find the political situation in New York very interesting at this time, and they are following developments closely and discussing them freely, chiefly because there isn't much else to do. Occasionally they lapse into retrospective moods and fondly dwell upon this or that big deal that looked as though it was going through and result in big orders—"way back last March." Then a violent denunciation of labor unions, walking delegates and all kinds of organizers and organization usually ensues, closing with speculations and predictions as to what conditions will be when through industrial inactivity employers have the opportunity to "get square" and put the screws on the other fellow. The present municipal campaign calls to mind the fact that within a year national politics will be the all absorbing topic. And this leads many to ask whether it is reasonable to expect any marked improvement in business until after the Presidential election.

In the meanwhile the stock market and iron market are commanding a good deal of attention. The latter is looked to as an indicator of fluctuations of actual values, and the downward course of securities is viewed with considerable apprehension, a constant fear being expressed that things may still assume a panicky condition, which has been most fortunately averted thus far.

The larger houses, who require an enormous amount of business to keep their plants in operation, are said to be shading prices wherever there is a chance to obtain an especially desirable order by this means. In the machine tool trade this feature is more conspicuous than elsewhere, as the large houses have an opportunity to play for complete equipments and offer bids on the entire lot considerably lower than the aggregate of numerous individual bids covering the various machines required.

The large Canadian Pacific Railway propositions now appear to be pointing in that direction. As is well known in the trade, the original specifications for this equipment were drawn to an extremely high standard. Machines asked for were to be designed somewhat in advance of present practice, so far as capacity for the use of high speed steels is concerned. In short, the specifications attracted considerable attention and many bids. It was confidently expected that the matter would be closed ere this. It is now thought, however, that in purchasing the equipment price will be the ruling factor, and that the advanced capacities, &c., will be eliminated. It is said in the street that an officer of one of the very large machine tool houses is now in Montreal submitting a bid covering the entire equipment.

The Erie Railroad Company have placed some of the orders in connection with the list which they issued a short time ago. It will be recalled that the entire lot amounts to about \$100,000. More than half is said to have been secured. While the representatives of the company state that the orders were pretty well scattered, it is said in the trade that the scatterings that escaped the big Liberty street houses were very small bits indeed. The machines which remain to be purchased are of the heavier types. It is expected to close on these within a week.

The Lehigh Valley Railroad are buying equipment for their new shops at Sayre, Pa. The power plant equipment is being decided upon at present, and we understand that the contract for heating and ventilating the buildings has been practically awarded. At the offices of the company these facts were said to be accurate, but no specific information was given. The order for the cranes was awarded to Manning, Maxwell & Moore. They will be built by the

Shaw Electric Crane Company of Muskegon, Mich. The order calls for 12 cranes, two of which will be 120 tons capacity each and ten of 15 tons each. The machine tool list, we are advised, is being completed by J. H. Vought, Assistant to Superintendent of Motive Power, whose offices are at South Bethlehem, Pa. We are advised that the new machine tools may not be purchased for some time, as it is intended to draw on all of the company's present shops for their heavy tools, as the Sayre shops will be devoted entirely to heavy work, and all work of this class will be performed there. The principal building will be the locomotive shop, which will be 366 x 750 feet. The blacksmith shop and storehouse will each be 103 x 360 feet and the power house about 130 x 275 feet, equipped for developing 4000 horse-power and eventually double that amount. The other buildings are also to be arranged for extension.

The Lackawanna Railroad have awarded contracts for the heating and ventilating systems for their new Keyser Valley car shops. The Buffalo Forge Company were the recipients. Each of the two freight car repair shops will contain two fans, with 7-foot blast wheels and heaters of about 8000 feet surface. The machine and blacksmith shops will contain a fan with 7½ feet blast wheel and a 6000-foot heater. The painting shop will contain a rather unique double system. There will be a heating system having a blast wheel of 9 feet diameter and a heater of 8000 feet surface, and this will be supplemented by an exhaust system to carry off the moist air, the fan having a blast wheel of 9½ feet diameter. The wood working mill will contain a fan with 7½ feet diameter blast wheel and 6000-foot heater. The fans will all be electrically operated, although it has not been determined as yet whether they will be direct connected or belted to motors. The motors have not been purchased.

The Board of Naval Officers appointed to inquire into the present capacity and means of future development of the naval gun factory at Washington have recommended the expenditure of about \$2,148,121 for new buildings, with the acquisition of about 12 acres of land, and \$1,316,237 for equipment. The report will be submitted to Congress, which will have to decide whether the appropriation shall be made or the Navy Department award contracts for the manufacture of naval ordnance. It is stated that the productive capacity of the gun factory, working double time, is from 50 to 100 per cent. short of the demands made upon it by the average yearly appropriations of Congress for new war vessels. To emphasize this belated condition, the report says that the Government now is building 12 battle ships, 8 armored cruisers, 8 protected cruisers and 2 gun boats. All of these vessels should be delivered by 1907. To equip them with ordnance will require the construction of 48 12-inch, 8 10-inch, 120 8-inch, 80 7-inch, 218 6-inch, 50 5-inch, 12 4-inch and 531 3-inch guns. Working the factory 16 hours a day, it would require five years to complete the 12-inch, five years for the 10-inch, ten years for the 8-inch and six years for the 6-inch, 4-inch and 3-inch guns. The only guns being made by private concerns are 24 8-inch and 36 7-inch naval guns.

The following machine tools are included in the specifications just issued by the Navy Department for the Puget Sound Navy Yard, bids for which will be opened October 6:

- Class 8. Twelve motors.
- Class 9. Three motors.
- Class 10. One electric elevator.
- Class 11. One pumping outfit.
- Class 12. One exhaust fan.
- Class 13. One revolving blue print machine.
- Class 14. One turret lathe.
- Class 15. One tool room lathe.
- Class 16. One center gridding machine.
- Class 17. Two sensitive drills.
- Class 18. One upright drill press.
- Class 19. One metal band saw.
- Class 20. One milling machine.
- Class 21. One bench lathe.
- Class 22. One square arbor lathe.
- Class 23. One horizontal boring machine.
- Class 24. One single spindle reversible shaper.
- Class 25. One knife grinder.
- Class 26. One universal grinding machine.

The following awards have been made for supplies for the United States Naval Academy, Annapolis, Md., bids for which were opened September 8:

Hendey Machine Company, Torrington, Conn., Class 1, one universal milling machine and one set of milling tools, \$1135.

Prentiss Tool & Supply Company, New York, Class 2, one 36-inch stroke shaper, \$769; Class 3, one metal planer, \$1135.

Smith-Courtney Company, Richmond, Va., Class 4, one 10-inch slotting machine, \$1171.

Manning, Maxwell & Moore, New York, one single spindle electrically driven upright sensitive drill, \$85.

Bids will be opened October 20 at the Bureau of Supplies and Accounts, Navy Department, Washington, for a quantity of supplies for the Mare Island and Puget Sound navy yards, including one horizontal boring, drilling and milling machine.

Bids for an electric jib crane and other supplies for the navy yard at Norfolk, Va., and the naval station at Port Royal, S. C., will be received until October 13 at the Bureau of Supplies and Accounts, Navy Department, Washington.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 13, to furnish at the navy yards, League Island, Pa., and Washington, D. C., a quantity of supplies, including machine tools, electric elevators, drills, tools, &c.

Electric motors, stone and ore crushers, grinders, drill, shear, punching and shearing machines, planer and railway dump cars are included in the specifications which will soon be issued by the Navy Department for the Boston and Portsmouth navy yards. Bids will be opened October 13.

An order for three steam turbines of the largest size has recently been placed with the Westinghouse Machine Company, East Pittsburgh, Pa., by Westinghouse, Church, Kerr & Co., acting as engineers and constructors for the Pennsylvania Railroad Company in connection with the New York terminal equipment. These machines will form the initial installation in the new Long Island power house, on which construction is just beginning, and which will serve the traction in the tunnels for the Hudson and East rivers and the New York terminal at Thirty-second street and Seventh avenue, and also such part of the Long Island Railroad system as in process of conversion to electric traction. The turbines will be of the Westinghouse horizontal short barreled type, mounted upon a single bedplate, resulting in a particularly compact arrangement and great economy of floor space; they will have a capacity of approximately 7400 electrical horse-power each, and will drive 5500-kw. three-phase alternating current generators operating in parallel. Their overload capacity will be over 11,000 horse-power, and each turbine will be provided with a bypass automatically controlled by the governor to accommodate abnormal fluctuations in load. This will also permit operation at full load non-condensing. The turbine equipment will operate under conditions favorable to the attainment of high economy—viz., 200 pounds steam pressure at the throttle, 28 inches vacuum and 175 degrees F. superheat. The generator will be direct connected to the turbine shaft through a flexible coupling, each section of the unit having two bearings of ample proportion, thus avoiding shaft stresses. The three-phase winding will deliver current directly to the distribution system at 11,000 volts, no step-up transformers being employed. The machines will be separately excited and will carry full load continuously at 100 to 80 per cent. power factor, with a rise in temperature of 35 degrees C., or 50 per cent. overload for two hours, with an increase in temperature rise of slightly over 50 per cent. Each turbo unit will thus be capable of delivering 8250 kw. for reasonable intervals, and considerable in excess of this figure during momentary load fluctuations. The entire equipment will be delivered by July, 1904, one year from the date of contract. The Westinghouse Company state that they have 11 turbines of approximately the same size now under construction for heavy electric railway service, both in this country and abroad.

Notices are being sent to the trade announcing the absorption of the business formerly carried on by Leander S. and James N. Heald, at Barre, Mass., by the Heald Machine Company, a corporation with factory and headquarters at Worcester, Mass. The new company state that the shop equipment of their new plant is thoroughly modern, and capable of turning out double the production of the former shop.

Metal Market.

NEW YORK, September 30, 1903.

Pig Tin.—The market has suffered a sharp decline during the last week owing to the closing of some tin plate mills in this country, the continued lack of demand from consumers and the heavy break in London. Prices reached the lowest point yesterday, touching 25.50c. for spot. A reaction this morning brought ruling quotations to 25.90c. on spot, October 25.50c. and November 25.37½c. The London market also reached its lowest yesterday and recovered considerably today. Yesterday's closing cables named spot at £111 15s., while to-day the market closed £115 2s. 6d. for spot and £115 15s. for futures. The arrivals this month aggregated 2345 tons.

Copper.—Business has shown no improvement and the market is still practically lifeless. In the absence of demand the "official" quotations of the New York Metal Exchange remain unchanged and nominally as follows: Lake, 13.75c. to 13.87½c.; Electrolytic, 13.62½c. to 13.75c.; Casting, 13.25c. to 13.37½c. While these figures are willingly shaded ¼c., still greater reductions can be found. It is freely stated that some of the large Lake producers have offered to sell at 13.25c. Electrolytic has been offered at 13c. and Casting 12.75c. London has fluctuated, reaching its lowest point yesterday with £54. At the close to-day the cables named: Spot, £55; futures, £55 2s. 6d.; Best Selected, £60 15s. The exports this month have footed up to 10,955 tons, which is a little better than the 10,742 tons of the corresponding period of last year.

Pig Lead.—The market is without change. Strictly spot Lead continues to bring 4.50c. here. The American Smelting & Refining Company still quote Desilverized at 4.40c. for 50-ton lots and 4.42½c. for carload lots, New York delivery, shipment within four weeks. London has declined to £11 flat.

Selter.—The market is strong and unchanged, and spot to September closed to-day at 6c. The London market has declined to £20 15s.

Antimony.—The market is weak and declining. Cookson's is quoted at 7.25c., while Hallett's has declined to 6.25c., and other brands are 5.75c. to 6c.

Nickel.—Is quoted at 40c. to 45c. for large quantities, and 50c. to 60c. in small lots.

Quicksilver.—The market continues at \$47.50 for flasks of 76½ lbs. London cables £8 10s.

Tin Plate.—The market is quiet. The American Tin Plate Company quote \$3.80 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, equivalent to \$3.99, New York. English cables are 11s. 6d. for Plates in Wales.

Iron and Industrial Stocks.

The past week has been another period of heavy liquidation. Gilt edged railroad stocks were as seriously affected as the industrials. Many of the iron and steel stocks again made new low records. United States Steel common sold down to 14½ on Tuesday of this week. The preferred suffered more than the common stock, large quantities being poured upon the market from day to day. The low point reached by this stock was 58½ on Tuesday. Other low prices reached during the week were as follows: American Can common 2½, preferred 25; Car & Foundry common 22½, preferred 75; Locomotive common 14½, preferred 82; Crucible Steel common 6½, preferred 54½; Sloss-Sheffield common 25½; Tennessee Coal & Iron 30%; Colorado Fuel 40; Railway Steel Spring common 16%; Cambria 17%; Pressed Steel common 29½, preferred 75½; Republic common 9, preferred 59%; United States Steel 5's 67½. Liquidation was checked on Tuesday, presumably by supporting orders given by banking interests, and higher prices were established. The improvement continued during Wednesday, and at noon the following prices were being realized on active stocks: Car & Foundry common 25; Locomotive common 15%; Colorado Fuel 42½; Pressed Steel common 33½; Railway Steel Spring 17½; Republic common 9½, preferred 63½; Tennessee Coal 32½; United States Steel common 16½, preferred 61½, new 5's 70%.

A more confident feeling obtains relative to the situation, as prices are now down to such a low point that they are no longer inviting attack by bearish operators, as was the case some time ago.

The August statement of the Pittsburgh Coal Company of Pittsburgh shows an increase in net earnings of 50 per cent. over August, 1902. The statement, in detail, is as follows:

Net earnings for month of August, 1903.....	\$628,151.95
Net earnings for month of August, 1902.....	401,987.20
Net increase.....	\$226,214.75
Net earnings for eight months ending August 31, 1903.....	\$4,524,554.92
Net earnings for eight months ending August 31, 1902.....	2,433,970.01

Net increase..... \$2,090,584.91

At Pittsburgh, stockholders of the Westinghouse Air Brake Company and the Electric Air Brake Company have been advised of a proposed consolidation of these two companies. The stockholders' meeting will be held on October 5, to act on the decision of the directors who have already agreed on the consolidation. It is not proposed to increase the present capital of either company. The Westinghouse Air Brake Company have been making the electrical brakes for the Electric Air Brake Company, at their plant at Wilmerding, Pa.

The directors of the Dominion Iron & Steel Company have passed the dividend on the preferred stock. The dividend was due on October 1. No action has as yet been taken on the dividends on Dominion Coal common, and President Ross states that a conservative course will be pursued, which is taken to mean that it will be deferred temporarily and later reduced.

The courts at Camden, N. J., have refused an application for an injunction to restrain the American Can Company from paying a dividend on the preferred stock. Lack of evidence was given as the reason.

Dividends.—The Pittsburgh Malleable Iron Company of Pittsburgh have declared a regular quarterly dividend of 2½ per cent. and an extra dividend of 2½ per cent., payable October 10.

Westinghouse Electric & Mfg. Company have declared a quarterly dividend of 2½ per cent. on the preferred and the assenting and nonassenting stocks, payable October 10. Books close September 30 and reopen October 12.

At Pittsburgh, the Rock Run Fuel Gas Company have declared a quarterly dividend of 1¾ per cent.

The directors of the Union Switch & Signal Company of Pittsburgh have declared the regular quarterly dividends of 2½ per cent. on the preferred and 2 per cent. on the common. This is an increase of one-half of 1 per cent. on each stock, or 4 per cent. per year on the two classes.

The Standard Underground Cable Company of Pittsburgh have declared the regular quarterly dividend of 2 per cent. payable October 10.

Chicago Pneumatic Tool Company have declared the regular quarterly dividend of 1½ per cent., payable October 25.

The Westinghouse Electric & Mfg. Company have declared a quarterly dividend of 2½ per cent. instead of 2 per cent. heretofore, placing this stock on a 10 per cent. basis.

The Philadelphia Machinery Market.

PHILADELPHIA, PA., September 28, 1903.

There has been no improvement in the machinery market during the past month. The expected increase in new business has not developed, and manufacturers as a rule view conditions with anything but satisfaction. September, it was hoped, would bring a flood of new orders, but not only have they failed to make their appearance, but inquiries as well have fallen off to a large extent; nor does the receipt of an inquiry mean immediate business at this time. Buyers are wary and it is more probable, except in cases of urgent necessity, that the bids received are collectively "pigeonholed" for future reference, awaiting a time when conditions have become more settled. Some manufacturers have as much business on hand as they can comfortably handle, but it is mostly made up of back orders, which, as a rule, will not average many months' work ahead, and unless business develops from some source, the outlook for the winter is anything but promising.

The larger plants will probably feel the curtailment of business more than the smaller ones. Many of the former have in recent years increased the capacities of their various establishments from 50 to 200 per cent., and should the period of inactivity be lengthy the possibility of having to run plants on a small production against heavy fixed charges is not pleasant to contemplate. Some mills in this territory are now closing down portions of the plants, lack of orders to run them profitably being given as the cause.

Labor conditions, to which the present uncertainty and inactivity of the market are said to be largely due, are still more or less unsettled. With these conditions prominently before the investor, together with a downward market in raw materials, new ventures and improvements are generally being left severely alone, while the manufacturer is making new expenditures only after careful scrutiny. Curtailment of expenses seems to be largely in order; buyers, we are told, will not even talk business, preferring to wait until conditions assume a more healthy tone, and, except in cases of absolute necessity, purchases of machinery tools and equipment will be largely deferred.

Manufacturers of locomotives, heavy machinery and large special tools have their shops well supplied with work ahead, in some instances said to be from three to four months; but this is the exception rather than the rule. Should deliveries be required in shorter time there is hardly any doubt that the customer would be accommodated. Medium sized plants vary in the amount of unfinished work on their books; with some 60 days would clean up present bookings, while others are already considering the advisability of laying off men in different departments of their plants.

Foreign trade has dropped off along with the domestic, except in a few instances in special lines. If home conditions do not improve at an early date, there will no doubt be a more determined effort made to place foreign business, which, owing to a pressure of domestic requirements, has not been done very energetically for some time.

The various foundries, both iron and steel, are not so busy as they have been. Some months ago it was necessary for buyers of castings to place orders subject to the foundries' ability to make deliveries; now, however, not only are good deliveries promised, but some of the foundries are aggressively seeking business.

The demand for general machinery and medium sized tools has been light throughout the month. On the machinery floor of the Philadelphia Bourse business has been exceptionally quiet, and very few sales of any magnitude have been made. Machinery dealers say it is very hard to get

buyers interested in any kind of proposition, let alone to place an order.

The market for smaller engines, tools, machinery and machine shop supplies is quiet, following the condition of the rest of the trade.

Prices generally are unchanged. There is practically no change in immediate factory costs, therefore no recession of prices is noticeable at this time. How long the present prices can be maintained in view of an extended period of dullness is a feature which cannot be anticipated at this time.

The Nicetown Plate Washer Company, Nicetown, Philadelphia, have about completed the erection of a new addition to their plant. A building 85 x 120 feet, of steel construction, has been erected and is now being equipped with new machinery for the manufacture of washers. The improvements under way will greatly increase the former capacity of the plant.

The Pennsylvania Railroad Company have awarded a contract for a new warehouse in this city, to be located on Carpenter street, from Fifteenth to Sixteenth street and extending to Washington avenue. The warehouse will be three stories high, constructed of brick, with stone trimmings and slab roof, and the window frames will all be of steel. The building will contain six large electric elevators and automatic sprinklers will be distributed throughout the structure.

The Baltimore & Ohio Railroad Company have let still further contracts for increasing their Mt. Clare shop. The capacity of this shop has been more than doubled during the past six years, and at present does not fully meet the requirements of the company. The additions now contemplated will incur an expenditure of about \$85,000, while the cost of the new tools and equipment, it is said, will be nearly \$100,000. Evar Brady & Co. of Baltimore have the contract for the new addition.

F. R. Phillips & Sons Company advise us that they have considerable business in prospect from foreign sources. They have recently shipped a quantity of rolling mill machinery to England and grinding machinery for parties in Continental Europe.

The New York Shipbuilding Company, Camden, N. J., laid on the 24th inst. the keel plates of the cruiser "Washington" for the United States Government. This, it is said, is the first armored cruiser to be built in New Jersey. It is expected that the vessel will be completed in 42 months, the Government's time limit of construction.

The American Pulley Company continue fairly busy. There has been some falling off in inquiries, and while orders are good, they are not for as large quantities as heretofore. Foreign demand is easier, but regular shipments continue to be made to Northern and Western territory.

The Link-Belt Engineering Company continue busy in all departments. Inquiries for their various lines are good and the estimating department is particularly busy. The resulting orders are said to be satisfactory and include one for a complete elevating and conveying equipment for handling clay for the Montello Brick Works, Perkiomen, Pa. A number of plants for conveying and for the storage of coal, &c., are in course of erection, and shipments on account of general orders are reported good.

The Alfred Box Company are busy in all departments. Inquiries are probably not so numerous as some time ago, but a nice lot of business has been taken. Among some recent orders may be mentioned one for a 40-ton, four-motor electric traveling crane, for the machine shop at the Boston Navy Yard, for the United States Government; one for a 12-ton, three-motor electric traveling crane, with runways, for the new Mint at Denver, Col., and a 10-ton three-motor electric traveling crane for the Dupont machine shops, Wilmington, Del. A 5-ton electric jib crane will be built for the new foundry of Williamson Bros. Company, in this city, and a 3-ton, three-motor electric traveling crane will be installed for the Eynon-Evans Mfg. Company, Philadelphia. Shipments of cranes have also been recently made to the following parties: a 25-ton, four-motor traveling crane for use in the storage yards of Henry A. Hitner's Sons, Philadelphia; two 15-ton, hand-power traveling cranes for the North Third Avenue Station of the Union Railway Company, New York City; a 15-ton, three-motor traveling crane for Williamson Bros. Company, this city. A 20-ton hand-power crane has been installed in the Twenty-third and Market street station for the Philadelphia Rapid Transit Company, and a complete system of runways and trolley tracks has been put in for the Barnes & Erb Laundry Machine Company, Philadelphia, Pa.

The Tabor Mfg. Company advise us that as far as orders are concerned, September has been the best month this year. Good business conditions for them have developed locally and in the Middle West. The export trade has also improved and offices have been opened by them at 49 Deansgate, Manchester, England; C. W. Coleman, their representative in Great Britain, being in charge. Some recent foreign orders include 16 molding machines, various styles

of their standard tools, for the British Westinghouse Company, and several machines of the power ramming split pattern type for the British Thomson-Houston Company. Domestic orders include, among others, four power ramming split pattern machines, two 14 x 16 and two 18½ x 21, for the Topeka shops of the Atchison, Topeka & Santa Fe Railroad. Deliveries during the past month have been numerous, both to local and to out-of-the-city customers.

The Eynon-Evans Mfg. Company continue fairly busy in all departments. The new additions to their plant are now all completed, and various machinery and tools are being installed. The demand for steam jet blowers is good and a number are in course of construction. Among other orders recently received was one for a lot of special bronze pump castings for the United States Government for use on various war vessels. Castings of different kinds are being shipped to local and nearby concerns; a number of large patterns have also been delivered to both local and out of town customers.

Dienelt & Eisenhardt continue busy, both in the foundry and machine departments. The former has a large amount of work on hand for local shipbuilding plants, while the machine shop is busy on general work. Orders have been received for a quantity of oil cloth printing machinery, and trade in hydraulic jacks is quite good. There is also a fair demand for dead stroke hammers.

The Falkenau-Sinclair Machine Works report a fair business. Inquiries are probably not so numerous as last month, but a good share of the current business is being taken. Recent orders include one for a number of special hydraulic valves for Pittsburgh parties and another for a number of cement molds for the city of St. Louis, Mo. Deliveries on standard presses have been good, several having been shipped to local and nearby parties.

The Philadelphia Roll & Machine Company made a high melting record during the past month, melting over 1,000,000 pounds of iron. This breaks any previous month's melt made by them. Business conditions with them are very satisfactory. Inquiries are numerous, and among recent orders was one for a 12-inch mill complete; a special shear, weighing about 35,000 pounds, for cutting 1-inch plates; an order for the complete equipment of blocks and dies for a hammer shop, and several orders for rolls and other heavy castings. A large number of special charcoal iron castings and rolls, both chilled and sand, have been delivered various customers during the month.

The Energy Elevator Company have had a busy month; inquiries are good and a satisfactory number of orders have been booked. Local trade is particularly good, while out-of-the-city business is about as usual. Recent deliveries of elevators include a carriage hoist and a power attachment for a freight elevator for Lancaster, Pa., parties. They are also remodeling a hydraulic elevator for the Betz Building, and have equipped elevators of the Gynecian Hospital of this city with safety devices. Other shipments of elevators have been made to parties in Thomasville, Ohio; Somerset, Pa.; Jamestown, N. Y.; Bedford, Pa.; Salisbury, Md., and York, Pa.

The Baldwin Locomotive Works continue very busy, a large amount of work for future delivery being on their order books. Considerable new business has developed during the past month, including a number of orders for foreign delivery, and a good business is looked for from the various domestic railroads in the near future. Their new Twenty-sixth street shop is now being occupied in part, and the other portions are being rapidly pushed to completion. The past month has been a very good one as far as deliveries are concerned. The prompt receipt of castings and various other parts entering into the manufacture of locomotives has enabled them to materially increase production. Recent deliveries include shipments of engines on account of orders for the Pennsylvania Railroad, Southern Pacific Railroad, Seaboard Air Line, Wabash, Philadelphia & Reading and other railway companies. Deliveries of Baldwin Westinghouse electric locomotives have also been made to the Dawson Fuel Company, Dawson, N. M.; Norfolk Coal & Coke Company, Mayberry, W. Va.; Berwind-White Coal Mining Company, Windber, Pa.; Pittsburgh Coal Company, Westland, Pa., and others.

The Royersford Foundry & Machine Company advise us that up to within the last week or two they have been extremely busy, both in the foundry and machine departments. Recently there has been a slight falling off in new business, but considerable work in the line of punch and shears is under way. The present lull they consider only temporary and expect a good healthy business to develop during the last quarter of the year. Recent deliveries of Royersford punch and shears include two No. 1 and one No. 3 machine for Henry Frank, Jr., New York; a No. 3 machine to the Atlas Portland Cement Company, Northampton, Pa.; a No. 3 to Meyer & Auslen, Brooklyn, N. Y. A No. 5 single punch was shipped the Cumberland Foundry & Machine Company, Cumberland, Md., through J. D. Mallory, their Baltimore representative, and a No. 3 combined punch and shear, 18-inch throat, was furnished the Pocohontas Collieries Company, Pocohontas, Va.

HARDWARE.

HERE are many events which, though recognized by intelligent observers, have effects not generally realized until gradual developments or some sudden happening brings them sharply to the public attention. Such has been the case with the destruction of forest trees, the influence of which is felt in Hardware and related fields with increasing power. The Screen Door and Window Screen business first felt this effect in the practical exhaustion of the white pine forest trees of the North, and recourse has been had to the cypress in the South and the more numerous, though less satisfactory, yellow pine of the South. Makers of Wheelbarrows have been utterly unable to keep up with the business that has come to them, not only because of the enormous demand, but of the exceeding difficulty in getting material. Manufacturers of Handles for Tools and Implements of all kinds have been at their wits' ends to know where to get the ash and hickory which alone seem suitable for this purpose.

The question is becoming more serious year by year, and we must face the fact and its influence in the direction of higher prices on the goods chiefly affected, unless relief can be found in some way which has not yet become apparent. The great forestry reserves of the extreme Northwest, particularly Washington and Oregon, are only partly available, because of the freight charges and the lack of suitable lumber for all purposes. Canada offers relief as far as quantity is concerned, but the tariff is thus far a barrier. The growth of new forest trees is a matter of one or two generations, and only a moderate start has been made in this direction. The facts certainly emphasize the necessity for a broad policy, which shall prevent the ruthless destruction of forests and look to the preservation of trees for other reasons besides the material contained in their trunks.

Human ingenuity may be trusted to find a satisfactory solution of the difficulties as other materials are brought into play, and probably with the result that the new methods will be regarded as, all things considered, an improvement upon the old. Substitutes of one kind or another are unquestionably available, but meanwhile the market feels to some extent the effect of the existing conditions. The laws of trade will naturally and unaided by any artificial assistance or direction take care of such matters, and if wood becomes relatively expensive here, as it is in the older countries, the supply for what is justified by a perhaps slightly diminished demand will be drawn from other and more distant sources. If this involves increased cost higher prices for the manufactured commodities into which it enters must be accepted. But for practical purposes, at the present time the scarcity and expensiveness of some kinds of wood are to be recognized from the effect they have even now upon market values.

Condition of Trade.

Those whose attention has for the past month been fixed on Wall Street are prone to regard the outlook for the remainder of the year with some solicitude. Those on the other hand further removed from the financial center of the country and in touch with the large volume of current business and the substantial basis for continued welfare on the part of the farming population con-

sider the prospects excellent for a large trade, which should make the closing months of 1903 very satisfactory and run over in good shape into next year. The point is certainly to be emphasized that the shrinkage in financial securities does not come as a result of commercial depression or from anything in sight in the industrial or business world. The course of values in the financial field has unfortunately some influence in checking enterprise and inducing a conservative and perhaps hesitating attitude on the part of the capitalists and, indeed, of the public at large. Reports from the country generally in regard to crops are, on the whole, very satisfactory, and a decidedly confident tone prevails, especially in the West and South, whose merchants find it difficult to understand the less sanguine expectations of others. While there is no general change, or, indeed, important change, in the prices of Hardware products, the great body of which remains steady, concessions are being made on an increasing line of articles, especially in heavy goods. This condition induces caution, and buyers, as a rule, are purchasing simply for their early needs. Some manufacturers are still behind their orders, and few are in a position where they are seeking business in an aggressive manner. The reports from retail merchants are quite satisfactory. What there is perceptible in the way of a let up in the general demand is owing largely to the influence of strikes, which have hindered business to a serious extent, and the apprehension of further trouble is still a menace to the market. There is, however, throughout the length and breadth of the land innumerable communities where these and other disturbing influences are not felt, whose people are pursuing the even tenor of their way in the enjoyment of a prosperity which cannot fail to have its effect on the market at large. The well being especially of the agricultural population is a factor in the situation which cannot be ignored, and will, it is hoped, give tone to the business situation in the months to come.

Chicago.

(By Telegraph.)

In contrast with the inactivity in Pig Iron and mill business in the intermediate and finished products of steel, trade in Hardware lines is active; especially gratifying under circumstances. The jobbing trade is especially animated, some of the local houses being obliged to work their shipping forces extra hours to fill contracts. Agents of Refrigerator manufacturers have entered the field and a few preliminary orders have already been booked. Representatives of manufacturers of Builders' Hardware and Shelf Goods who have just returned from trips in the South and Southwest report a satisfactory trade, having taken some desirable orders from jobbers, and although in some instances not as large as anticipated the aggregate is encouraging. The local trade in Builders' Hardware has been quiet, but a number of moderate sized orders for office and store buildings in Illinois and Michigan have been taken during the last few days. Manufacturers of Tools also report having taken one or two large orders from jobbers during the week. The distributing trade has also continued to purchase quite liberally of Wire and Nails and other standard staple goods, but at the close a little more conservative disposition is being shown. In Heavy Hardware, while there is a moderate volume of business, there is a lack of animation which does not exist in other lines. Sheets, both Black and Galvanized; Tin Plate, Bars, Angles, Channels and other Structural Material, have been slow, and in Bolts, Washers and Heavy Screws the drooping tendency of the market does not encourage an increase in business. But the store trade in Shafting is good. The jobbing trade report a continuance of activity in special and side lines as well as in Staple Hardware, and an increased movement in Hatchets, Cross Cut Saws, Hammers and Cutlery and a steady movement in Kitchen Utensils, including

Hollow Ware, both Wooden and Enamelled, and Coffee Mills, also in Laundry Goods, including Sad Irons, Washers and Wringers. The distribution of fall and winter goods continues liberal, there being an especially good demand at the moment for Snow Shovels, Axes and Lanterns. The centennial celebration at Chicago has attracted a number of country merchants who are combining business with pleasure; many of them are from the far West, and the largest jobbers report trade especially satisfactory. The smaller dealers in the district near this center are less unanimous in encouraging reports, a number of them advising that collections are very slow, especially in the country where old crop corn has been held from market. In fact, the tardiness with which collections are coming forward is one of the drawbacks to an otherwise very healthful situation. Reports from the grain pits, however, are that old corn is moving more freely, with the assurance that the new crop will be way above the average, and that a large portion of the crop has matured to a point where little damage can be done by frost. In fact, light frosts in some sections will be an aid rather than otherwise.

Boston.

BIGELOW & DOWSE COMPANY.—Business conditions in New England are normal. Shipments from the shoe factories are the largest for many years. The cotton mills are starting up with full complements of workmen. The woolen industry is also flourishing. The summer tourists have left us, but many landlords are mourning over the unusually small amount of money they have left behind them as compared with former years.

The strikers have done their work, and reduced the building interests to a minimum. It is a long time since there were so few new structures in process of erection. The month of September has shown the usual volume of business, and it is still difficult to obtain prompt shipment of many lines of goods from the factories. A few days since we had a letter from the D. Maydole Hammer Company saying they were eight months behind delivery of orders. Many factories are still far behind. We read of lower prices for material, but manufacturers claim this decline is more than offset by increased wages and cost of supplies, and that it is impossible to reduce prices while present labor conditions continue.

When one considers the chaotic conditions in the stock market, it seems as if it must eventually affect the price of merchandise, until one realizes that the latter represents a real tangible asset, while the former is but a bubble blown about at the will of those who have no knowledge or appreciation of the value of the manufactures which are the products of the companies whose stock they boom or bear at their own free will. Money conditions are much the same as those prevailing in the stock market, for in the present concentration of capital the money kings have the power to punish any one who does not do their bidding; even the Government is not exempt. The merchant who is careful and attends to his legitimate business has no cause to fear the results of the furious warfare now being waged in Wall Street. The banks are bound to protect their customers rather than the speculators, as the former are here to stay, while the fate of the latter is problematical. While one continues to buy and sell Hardware in a legitimate way there is nothing to fear.

Baltimore.

CARLIN & FULTON.—In spite of the vicissitudes and troubles of Wall Street the general condition of trade throughout the country is good. The market price for stocks has not affected nor been caused by the selling prices of merchandise, and the shrinkage from the inflated values of stock certificates contrasts most strongly with the intrinsic value of manufactured goods. The speculative public may have little faith in the value of Steel, preferred and common, but stock exchanges have not been able to reduce the price of Nails and Wire 1 cent. We see the shipping trust shares quoted at almost nothing, but still we have not heard of a ticket to Europe being sold 1 cent cheaper.

Good crops with a large demand and good prices will

continue to keep the industries of this country profitably employed provided labor will act reasonably and co-operate with instead of antagonizing capital and progress.

The market is generally firm. There are some few declines; but, on the other hand, there are advances, so the average situation is strong.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—In "The Pit" Mr. Norris has created a character in Jadwin, whose sixth sense, that of reaction, has been and will be a valuable type if incorporated in the make up of Hardware buyers. That a reaction is due and coming in the iron and steel business can only be contended against by a fool or where self interest is concerned. To contend that the slump in United States Steel and other industrials has no bearing or influence on business is puerile and foolish. The fall in stocks is as sure a barometer of bad weather in the business world as the rise is of clearing and better times ahead after the cloudy and depressed conditions following a panic.

The worst handicapped industry is lumber. There have been started 256 new saw mills in Oregon, Washington and California, and overproduction is now the cry.

On the other hand, harvest is now practically completed and crops secured. While some sections show a falling off in returns they are generally those that have been highly favored in the past four or five years, so that they are in a position not to feel the loss as keenly as they otherwise would.

Portland's new directory indicates a population of 123,662, against 1900 census of 90,426 that showed 95 per cent. increase over 1890. Clearings last week 21.8 per cent. increase over those of 1902 and no padding, as we are one of but two cities on the Pacific Coast that clear balances in United States gold coin; San Francisco being the other. We are growing in population and wealth, proportionately, as fast as any of them.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is active, and there is an immense demand for goods. The railroads say they are still loaded down with everyday merchandise and from the delayed deliveries that we experience we are fully prepared to believe that. The congestion at the large shipping and transfer centers is most trying, and complaints of delays are the order of the day. The railroads are certainly deficient, either in equipment or in their methods and facilities of transportation. The country pays an immense price for sluggish movements of its goods. A day's delay multiplied by the number of cars in transit is no small sum, reckoned by dollars and cents.

The course of Wall Street is a mystery to the people out West, who are up to their eyes in business (and apparently not unprofitable business). Possibly it is that mystery which is keeping the public out, causing prices to decline. Prices cannot be upheld by a few magnates indefinitely, no matter how great their resources.

A distinct scarcity may be noted in articles where lumber enters into the construction. There is no oversupply of that, and our rapidly disappearing forests remind us that some substitute must be employed more and more liberally in the near future. May we not look to steel for this?

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—The business situation in Omaha and surrounding territory is now considered more favorable than at any time this fall. During the cold weather of two weeks since the outlook appeared somewhat gloomy for the ripening corn, but since that time the advent of warm and pleasant weather has produced a decided change in the conditions, and it now appears to be an assured fact that there will be a very fair crop of corn, taking the States of Nebraska and Iowa as a whole. Business continues very large in a general way, and reasonably up to expectations. Prices remain remarkably steady, and it is to be observed that very little effort is being made to influence increased business by concessions in prices. The conditions existing in the iron and steel markets in the Pittsburgh district are

attracting considerable attention, and now that production appears to have reached a point where it is in excess of the demand, the old remedy of "forcing a balance" by restricting production is being once more tried. Whether this questionable remedy will produce the desired effect remains to be seen. General opinion appears to be unfavorable to this temporary expedient.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Our letter in last week's *Iron Age* was intended for publication the preceding week, but was delayed in the mails. Its reference, therefore, to the weather conditions did not apply to the situation last week. In the letter we stated that a few days of sunshine were greatly needed. Since that date we have had the finest of weather, and at this writing—September 28—it still continues. The wet spell did not last long enough for the thresher crews to disband, and now for two weeks they have been "up and at it" hard from dawn to dark, and probably as much grain has been threshed from the shock in that time in the Northwest as ever before. Two weeks more of favorable weather will practically save the shocked grain. Grain is now beginning to come rapidly forward, and probably the railroads and elevators will be crowded beyond their capacity for the next three months. Just now a strike among some of the employees in the mills is on, and if it should extend throughout the mills and be protracted it would delay grain deliveries. But it is now probable the strike will fail and business not be seriously disturbed.

The damage from the frosts about the middle of September was greatly exaggerated in the reports that were sent out to the press. The facts are that less than the average amount of loss has been sustained by all the unfavorable conditions of the elements combined, whether hail, drought, frost or flood. In this latitude vegetation is as fresh as it is often seen here in the last days of September, and corn, which has been late all season, has at last fairly ripened. The Northwest now expects to get about the usual amount of money out of its crops, and business will go along in the usual way till well on in the spring, when the new crop conditions will, in their turn, becoming a controlling factor.

Collections have been a little slow, on account of the delay in moving the crops, but there is not much thus far to complain of and things look well ahead.

Cleveland.

THE W. BINGHAM COMPANY.—The Hardware jobbers in this section are enjoying a very good trade for this time of year. A large number of orders are coming in from salesmen and by mail in well assorted lots. Also trade on mining, milling and manufacturing supplies is very good.

There is no need or disposition to cut prices, and merchants are not afraid to sort up quite liberally. Quite a lot of new business has been coming to us, we having sold a number of stock orders in the last month to go to different sections, which goes to show that parties are desirous of embarking in the Hardware business, believing it is a good proposition for them to put their money into. On the whole, trade is quite satisfactory in this section.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—There are no changes of importance to note in conditions here since our last report. The drought in this section of the country remains unbroken. Fortunately for the farmers this drought set in too late to do any very great damage. It has, however, injured the crops to some extent, but trade continues good, merchants realizing that notwithstanding the damage to crops by the late drought, we will make better crops than we have had for several years, and the indications are that fine prices will be realized. While the prices of raw material are considerably reduced, Hardware jobbers are almost too busy to consider the question of reducing prices on the finished product.

NOTES ON PRICES.

Wire Nails.—Demand, including new business and specifications on orders, is now about equal to the product of the mills. Some trouble is experienced in getting cars promptly for shipping. The market is well maintained, but possibly delivered prices do not always represent full tariff rates. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$2.00
Retailers, carload lots.....	2.05
Retailers, less than carload lots.....	2.15

New York.—While the labor situation shows no improved conditions, demand continues steady, amounting to a fair distribution of Nails. Quotations are as follows: Single carloads, \$2.20; small lots from store, \$2.25 to \$2.30.

Chicago, by Telegraph.—There has continued to be an active movement on contracts previously placed, shipments being made as fast as the car supply will allow, full specifications on new orders coming in in ample volume to insure continued activity. The tone of the market is firm, sales being made at \$2.15 to \$2.20 in carload lots, f.o.b. Chicago, the inside price to jobbers and the outside to retailers. Less than carload lots sell at 5 to 10 cents higher. For galvanizing 75 cents per keg and for tinning \$1.50 extra per keg is charged.

Pittsburgh.—Demand for Wire Nails keeps up fairly well, but buyers continue to place orders mostly for small lots, which, however, aggregate a considerable tonnage and serve to keep the mills well employed. The tone of the market is firm. We quote \$2 in carloads to jobbers, \$2.05 in carloads to retailers and \$2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

Cut Nails.—At the regular meeting of the Cut Nail Association, held last week, September prices were reaffirmed for the month of October. This action was contrary to the expectation of some in the trade, who anticipated a reduction in price. This was not considered desirable by a majority of those attending the meeting. Notwithstanding this decision, the market shows a tendency toward weakness, and there are rumors of irregularities in price. Quotations are as follows: \$2.15, base, in carloads, and \$2.20 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms, 60 days, less 2 per cent. off in 10 days.

New York.—The local demand continues steady, but of moderate volume. Quotations for carloads and less than carloads are as follows: Carloads on dock, \$2.29; less than carloads on dock, \$2.33; small lots from store, \$2.40.

Chicago, by Telegraph.—The orders being received are only moderate in volume, there being an impression that lower prices may result from the next meeting of the association. Sales have continued to be made on the basis of \$2.30 in carload lots and \$2.35 for less than carload lots for Steel, Chicago. Iron Nails are quiet, but the supply is only moderate and sales are made at \$2.45 to \$2.50 per keg from store.

Pittsburgh.—Demand for Cut Nails is only fair, the trade confining purchases mostly to small lots. The action to be taken in regard to prices at the next meeting of the Cut Nail Manufacturers' Association is awaited with a good deal of interest. The tone of the market is fairly steady, and we quote Steel Cut Nails, \$2.15, base, in carloads and \$2.20 in less than carloads; Iron Cut Nails, \$2.25, base, in carloads and \$2.30 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

Barb Wire.—The West is experiencing a more liberal demand than the East, including shipments on old contracts and new business. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.30	\$2.60
Retailers, carload lots.....	2.35	2.65
Retailers, less than carload lots.....	2.45	2.75

Chicago, by Telegraph.—While jobbers are disposed to be a little more conservative the mills are well supplied with orders and specifications are coming forward freely, especially from the Southwest and West, but there is also a good inquiry from the Northwest. Galvanized Wire is selling on the basis of \$2.75 to \$2.80 in carload lots, and Painted at \$2.45 to \$2.50, the outside price being to retailers. For small lots 5 to 10 cents extra is charged. Staples in carload lots sell as follows: Plain, \$2.30 to \$2.35, and Galvanized, \$2.70 to \$2.75, the outside price being to retailers.

Pittsburgh.—New orders are fairly liberal, and specifications on old contracts are coming in quite freely. New business entered by the mills this month was much heavier than in August, and the outlook for fall trade is regarded as very good. Prices are firm, but without change. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.30; Galvanized, \$2.60, in carloads to jobbers; Painted, \$2.35; Galvanized, \$2.65, in carloads to retailers; Painted, \$2.45; Galvanized, \$2.75, in small lots to retailers.

Smooth Fence Wire.—Distribution continues on a liberal scale, and stocks at mills are sufficient to make prompt shipments. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.90
Retailers, carloads.....	1.95
Less than carloads.....	2.05

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12 & 12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55
Galvanized.....\$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—Both association and independent mills are well supplied with orders, new specifications coming in rapidly on manufacturers' contracts. Jobbers are also buying to a fair extent, and the demand for Fencing is especially active with a firm tone, prices being as follows: Nos. 6 to 9, \$2.05 to \$2.10 in carload lots on track, and \$2.15 to \$2.20 in less than carload lots from store; Galvanized, 30 cents extra for Nos. 6 to 14, and 60 cents extra for Nos. 15 and 16.

Pittsburgh.—Orders are being placed very freely, and the mills have more tonnage on their books than for some time. We note a specially heavy demand for Wire Fencing, particularly from farming sections in the West. Prices are firm, and we quote: Plain Wire, \$1.90, base, for Nos. 6 to 9 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14, and 60 cents extra for Nos. 15 and 16.

Cordage.—The demand for Rope has been good up to within a week or two, this being the season when purchases from manufacturers are likely to show a falling off. In consequence the market shows some irregularity in prices. Some makers are asking 12 cents for first-quality Manila Rope, but for large and desirable orders are shading this price from $\frac{1}{4}$ to $\frac{1}{2}$ cent per pound. Quotations of $11\frac{1}{4}$ and 11 cents have also been made, but these prices are exceptional and are not representative of the general market for pure Manila Rope. Second-quality Manila is quoted at 10 $\frac{1}{2}$ to 11 cents, made to order. A general quotation for pure Sisal appears to be 9 $\frac{1}{4}$ cents, while for mixed Sisal quotations range from 8 to 8 $\frac{1}{2}$ cents per pound. All these quotations are on the basis of 7-18 inch diameter and larger.

Scythes.—The Scythe market is giving some indications of irregularity, and it is understood that quotations are being made below those recently agreed upon by the manufacturers.

Cutlery.—The manufacturers of fine Cutlery report that the demand is increasing for the more expensive grades of goods. In other words, the proportionate demand is greater than for the cheaper grades. Materials advance in prices. Pearl, which enters largely into the manufacture of costly Cutlery, is very high indeed, for several reasons, the advance being from 25 to 40 per cent. The present fashion for pearl buttons has caused a very

greatly increased demand, and in the face of that condition, the supply is short. Storms in the Indian Ocean have wrecked many pearl fishing boats and the closing of the Philippine trade had its important effect on the supply of pearl. Ebony is also very high—that is, the Madagascan ebony, which is much the best quality, that from the west coast of Africa, known as Gaboon ebony, not being black clear through the wood. Since the French occupation of Madagascar some sort of an embargo has been placed on ebony, which has raised the price from \$80 a ton, which is about the normal, to \$200. The cost of stag horn is 25 per cent. higher than it has been, and this is supposed to be a permanent condition, owing to the scarcity of the animal, so that the new prices will soon be considered normal, the manufacturers state. Rubber, another article which enters into the manufacture of Cutlery, for handles, has also advanced in the Para variety, which is much better for this purpose than the Mexican rubber. Cocobola, ivory, bone and celluloid remain about the same. The Cutlery manufacturers state that their prices have not advanced in the same proportion to the price of raw materials, owing to the sharpness of competition.

Taps and Dies.—The manufacturers of Taps and Dies report business to be exceedingly good, the demand not having fallen off to any appreciable extent. Domestic orders continue to come in without a sign of diminishing, the only doubt expressed being as to the export trade which, with some manufacturers, appears to be letting up a little. Prices continue steady.

Glass.—The Window Glass market is in a demoralized condition as far as prices are concerned. In this market quotations are made as low as 90 and 20 per cent. discount for the first three brackets, and 90 and 25 for larger sizes, both single and double strength. In the West different prices are made on single and double strength, quotations having been made by jobbers of 90 and 20 per cent. discount for single and 90 and 30 for double strength. The claim is made that all the Glass sold at the above prices, from stocks purchased during the last fire, is sold at a loss to the jobbers. At the meeting of the National Window Glass Jobbers' Association, held September 24, it was decided to wind up the affairs of the association, but arrangements were made to retain the charter. The price on Plate Glass has been reduced by American manufacturers, the greatest reduction being on sizes 10 square feet and under. The price in Eastern territory is now 80 and 10 and 5 per cent. discount on all sizes. Before this change took place prices were 80 per cent. discount for sizes 10 square feet and under, and 80 and 10 per cent. discount for all sizes above. The largest proportion of imported Plate Glass has been the smaller sizes, and prices have been reduced to permit American manufacturers to control a larger proportion of this trade.

Oils.—*Linseed Oil.*—The market continues quiet, and demand restricted to small lots. The tendency is toward a stronger tone, and crushers show no inclination to encourage placing orders for future delivery. While the demand is confined to small quantities, quite a volume of Oil is changing hands. Large as well as small buyers are supplying their wants in this manner. Quotations are as follows: City Raw, 40 cents; out of town Raw, 37 cents per gallon.

Spirits Turpentine.—Light demand in the Savannah market has caused an easier feeling at this point. Demand is moderate at the following quotations, according to quantity: Oil barrels, 58 $\frac{1}{2}$ to 59 cents; machine made barrels, 59 to 59 $\frac{1}{2}$ cents per gallon.

OTTO S. WOLFE, formerly manager of the Keystone File Works, South Bethlehem, Pa., and H. R. Laufer have bought out the former proprietors of the concern, and will continue the File resharpening business under the same style, Mr. Wolfe being secretary and treasurer. The company employ a patented process for renewing the Files. They say that they do not recut but resharpen the Files, and that without disturbing in the least the temper or materially reducing the weight of the File.

A WESTERN MERCHANT'S SUGGESTIONS ON HARDWARE WINDOW DISPLAY.

THE Hardware merchant cannot expect customers to ferment him out from a dark and dingy place of business. He must keep pace with the rapid advancement of the times. Merchants in other lines of business have long since replaced their small show windows with plate glass fronts and pay good salaries to window trimmers.

Clean Windows.

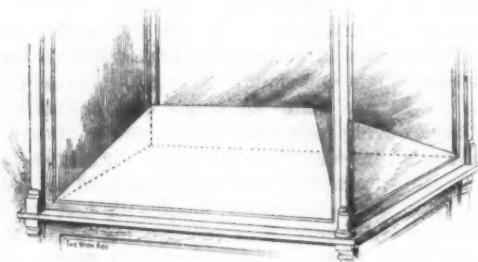
First of all, the windows must be kept clean. One usually judges a store by the appearance of its windows. If they are kept clean the inference is that the store itself must be the same. The windows must be cleaned and the display changed at least once a week, if not oftener.

Display Tables.

Display tables that may be placed at different angles in the window can be frequently used to good advantage. If one does not care to go to much expense a display table with five 9-inch shelves about 9 inches apart can be placed in the window. Red flannel thrown loosely over the table forms a fine background for Carpenters' Tools and Nickel Plated Ware. Not being tacked onto the table it can easily be kept clean.

A Sloping Platform.

Different methods of displaying goods are desirable. An effective display of Cutlery, Revolvers, Skates, &c., can be made on a sloping platform placed in the window at an angle of about 20 degrees with the window floor ex-



A Sloping Window Platform.

tending back the entire depth of the window space, as shown in the accompanying illustration. It looks particularly well when covered with red flannel.

One Line at a Time.

Do not try to put too many different kinds of goods into the window at once. One week, for instance, fill it with Steel Goods, another week Refrigerators and Water Coolers, then try a week with Enameled Ware. The results will be much better than if an attempt is made to show a little of everything in the store at the same time. A large quantity of goods of the same kind shown in the window at once is calculated to impress the people that a large and complete stock is carried, and when they need the goods they will remember that Mr. A—— has such an assortment. There is no question about the show window being responsible for selling a good many hundred dollars' worth of goods. It not only increases the sale of goods while they are in the window, but also for some time after the display has been removed customers will ask for a Grass Hook or a Washing Machine such as they saw in the window a short time since.

Mechanical Displays.

Nothing will catch the eye of the public more quickly than something moving in a window. A small electric motor or a water wheel can be put in without much expense and used to run a bicycle, a sewing machine, a lawn mower or a washing machine. A large wheel, 6 or 7 feet in diameter, placed in the window and decorated with Carpenters' Tools, Nickel Plated or Tin Ware, can be run slowly. It is surprising to see how many people will stop and look at such a display.

Advertising New Goods.

Whenever a new line of goods is received it should at once find its way to the show window. There is no better

way to get goods quickly before the public than to have them displayed. Better results can be obtained from window displays if they are followed up by neatly written advertisements in the papers calling attention to the goods.

Meeting Department Store Competition.

Most goods should be priced in plain figures when put into the window. Offer special sales on the goods and it will not be long before the public will be watching it for bargains. Get the people in the store. Let them know that goods are as cheap as the local department stores. Carry two grades of goods if necessary. A merchant cannot build up a high-class trade on cheap goods. Be content with a reasonable profit on small articles especially. Do not think it necessary to make 200 or 300 per cent. on little things. It was just that kind of work that caused the drygoods merchant to put in a stock of Kitchen Furniture. He is satisfied with a smaller per cent. than most Hardware dealers are.

Sell Close on Cheap Articles.

Some merchants think they can just as well get a good price out of the small articles because customers do not complain. But the next time an Iron Basting Spoon is wanted the former customer will probably go to the cash store and get one for 6 cents just like the one for which 10 cents was paid; and the Dover Egg Beater can be gotten for 11 cents, while the merchant thinks it will sell as readily for 15 cents. Customers naturally think that they can save money if they buy the little things at the department stores. It was the fault of the Hardware merchants that they lost this trade. Use the show window as a medium to induce the customers to come back to the Hardware store for their Kitchen Supplies.

DISASTER TAKEN ADVANTAGE OF.

THE S. J. STEBBINS HARDWARE COMPANY, Chicago, Ill., suffered from a disastrous fire some time ago. They took advantage of this condition to bring their name and business prominently before the public by issuing a folder, calling attention to the fact that they, Phoenix-like, had arisen from their ashes, rejuvenated. The folder consisted of four pages of orange colored paper, printed in black and red. On the front page the folder stated that the company were burned out on April 13, and that the entire building was remodeled, new stock on the shelves and the company ready for business again on May 26. The inside pages of the folder were devoted to the company's creed, as follows:

THE "STEBBINS WAY" OF DOING BUSINESS.

WE BELIEVE

That you will enjoy visiting our new store. Everything inside and out is fresh and new.

WE BELIEVE

That you will appreciate a store where you can find everything that is manufactured in the line of Hardware, Cutlery and Tools.

WE BELIEVE

That the manner in which a salesman waits on a customer indicates to a great extent the character of the house and makes either a good or a bad impression.

WE BELIEVE

That it is a pleasure to do business with a house that performs every detail in a clean cut and satisfactory manner, but that it leaves a sting to be answered abruptly or discourteously. There is no room in our establishment for discourteous or unobliging salesmen.

WE BELIEVE

That it pays to treat customers right. You are just as welcome at our store when you come in to spend five cents as when you come in to spend five hundred dollars.

It will be observed that progressive methods, a clean store with neatly kept stock complete in all lines of Hardware and courteous treatment of customers under all circumstances, are relied upon to win trade.

The firm of Wike & Davis, dealers in Hardware, Farm Implements, Stoves, Tinware, Buggies, &c., Barry, Ill., have been dissolved, Mr. Wike retiring. N. R. Davis, formerly junior partner, will continue at the old stand.

FACTORY COST METHODS

FACTORY COST SYSTEM OF ENTERPRISE MFG. COMPANY.

Third Article.

The preceding articles explained the method of ascertaining the labor cost of grinding the face of Sad Iron No. 50, as shown in Summary Card, Fig. 18. The manner in which Room Expenses is charged up and the total cost of the sad iron is described below.

**RECORD OF
ROOM EXPENSE.**

Each department has a job number for its room expense, and in this way supplies for the room and the cost of nonproducing labor are charged up against the room.

Job No.	2163	Dept.	18
Date	1/29/02	to	6/26/02
Time	2823 - $\frac{1}{4}$ hrs. @	4.4	\$ 124.21
	hrs. @		
	hrs. @		
Premium			
Total			124.21
Proportion room expense			112.92
19 pieces spoiled at 4.9			.93
Total			238.06
Number of pieces	63944		
Cost of Job per piece			.0037

Fig. 18.—Summary Card of Time Slips. Size of Card, 3 by 4 inches.

All supplies other than the materials actually used in the article itself are charged to each department on the requisition of the foreman, and charge slips, as referred to below, Figs. 23 and 24, for all such supplies are sent to the Record Department. The total of these slips, so far as they relate to supplies for the department rather than for any particular job, when taken together with the estimated cost of power and the foreman's wages and the wages of any nonproducing help in that department give the room expense.

The total number of quarter hours reported from any department by all time slips divided into the total room expense will give a per quarter hour room expense, which is added on the summary cards to each operation in proportion to the number of quarter hours reported for that operation. Thus in the summary card represented in Fig. 18 room expense is charged up at 4 cents per quarter hour, making on the 2823 quarter hours devoted to job No. 2163, a room expense charge of \$112.92.

The repairs of Tools and Patterns are charged to the operation or to the individual piece as far as possible. When this cannot be done they become part of the room expense, which is distributed, as explained above.

The principles which govern proportionate charge for general factory expense as applied to each article is referred to below.

BRING'NG TOGETHER THE ELEMENT OF COST.

Referring again to Fig. 18 it will be seen that in this summary card are brought together the items which enter into the labor cost of job No. 2163, the grinding of the face of the Sad Iron, the method of determining the total cost of which is under consideration. It is thus shown that the cost per piece of this operation is 0.0037 cent.

By referring to the job number card, Fig. 10, the job

numbers of the other operations, such as grinding edge, drilling, tapping, polishing, &c., are ascertained, and the summary cards relating to each of these jobs are collected, and the costs of the various operations brought together, as shown in Fig. 15, the various operations being as follows:

	Job No.
Grinding Face.....	2163
Grinding Edge.....	" " 2164
Drilling Edge.....	" " 2165
Tapping.....	" " 2166
Polishing Rough.....	" " 2167
Polishing Second.....	" " 2168
Polishing Color.....	" " 2169
Polishing Oil.....	" " 2170
Nickling.....	" " 9264
Buffing.....	" " 8742
Inspecting.....	" " 3442

Fig. 19 thus shows that the labor costs of the various operations in which the bottom of the Sad Iron is concerned, including a proper charge for room expense and breakage is 0.065 cent. To this is added the cost of the material.

To ascertain the material cost, reference is made to the card in the Engineering Department, Fig. 5, showing the weights and kinds of all materials, and from the purchasing department is found the materials cost. There

Fig. 19.—Summary of Manufacturing Costs of Part No. 1235.
Size of Card, 5 by 9 Inches.

is accordingly to be added to the labor cost above a charge for the material in the bottom of the Sad Iron, 0.044 cent, as shown in Fig. 19, making a total cost of the bottom of the Sad Iron, 0.109 cents.

TOTAL COST OF SAD IRON.

By referring to the descriptive card, Fig. 5, the part numbers of the other parts of the Sad Iron—namely, the Cap, the Screws and the Tin, are ascertained. Each of these parts is treated, so far as the system of costs is concerned, in the same way as the bottom of the iron. Part

No. 1235. Aggregating these labor costs and the cost of material for these various parts, the total cost of the Sad Iron in question may be supposed to be as follows:

Bottom; Part No. 1235.....	\$0.109
Cap (Tinned), Part No. 1234.....	0.015
Screws, Part No. 1237.....	0.002
Tin, Part No. 1238.....	0.001
Erecting	0.001
<hr/>	
Total material and labor cost.....	\$0.128

To this is to be added a proportionate charge for general factory expenses. Under this head must be considered such items as taxes, gas, water, power, superintendents, draftsmen, all nonproducing help, such as blacksmiths, carpenters, plumbers, &c., whose work cannot be charged to any particular piece or article, and is not entered under room expense. These expenses are aggregated for a given period, say, a year, and the proportion they bear to the total pay roll ascertained, and this proportion is added to all labor costs. Thus, in the case of Part No. 1235:

Material and labor cost.....	\$0.128
General factory expenses (suppose 10 per cent.).....	0.013
<hr/>	
Total manufacturing cost.....	\$0.141

SYSTEM OF TELEPHONE SERVICE.

The list of telephone stations is of interest as illustrating the organization of the factory and the manner in which all the various departments are connected. Fig. 20 is a reproduction of card giving this information, which is posted throughout the plant.

SPECIAL DELIVERY AND MESSENGER SERVICE.

For the prompt delivery of small lots of materials wanted by the various departments a special messenger service is provided, each messenger making a complete circuit over a stated route each hour. Each of these mes-

sengers is given a tag, as shown in the accompanying illustration, Fig. 21, in which both the front and back of the tag are shown, with the punchings of the various foremen.

It will thus be seen that the circuit referred to in the tag reproduced, Fig. 21 is to be completed before eight o'clock. The numbers on the margin of the tag are the various departments throughout the factory, and are punched by the foreman of each department as the messenger presents himself. The various messengers used in connection with this special service are designated by the opening letters of the alphabet, A, B, C, &c.

When there is need of a special messenger one can be telephoned for and furnished by the record department. A record of such special service is kept as per the form, Fig. 22. In this way a record is kept of the department from which the call comes, the hour, and a statement of the service required. By this means efficient service is secured, and a complete record of it made for inspection, and in a convenient form to be preserved. It was found desirable to inaugurate this system to prevent waste of time, as workmen were sometimes sent as messengers, and this occasioned an interference with the regular operation of the plant.

The concluding article descriptive of the Cost Methods of the Enterprise Mfg. Company will relate to the business system of the Store-room Department, Loan Reports, Machine Record Cards and Scrap Reports.

THE SIMONDS MFG. COMPANY, Fitchburg, Mass., are sending to their customers a neat desk pad, which has the additional advantage of a pocket for putting away memoranda which it is desired to save. The pad is of black leather, against which the tinted leaves show out in pleasant contrast.

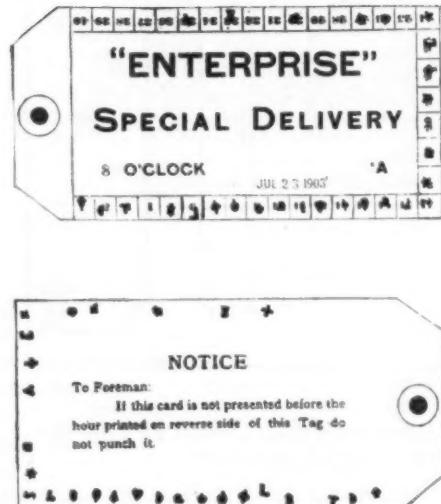


Fig. 21.—Messengers' Special Delivery Tag as Punched by Foreman of Each Department. Size of Tag, 3 by 6 Inches.

Telephone Stations

9	Automatic Room	18	Polishing Room
15	Blacksmith Shop	41	Power House
31	Boiler Room	30	Printing Room
10	Brass Pattern Shop	38	Private Office (c. w. ASBURY)
19	Carpenter Shop	40	" " (H. E. ASBURY)
33	Core Room	39	" " (KOENIG)
34	Directors' Room	35	Record-Dept. (YOUNG)
27	Drawing Room	36	" (FLY)
23	Drill Press Room No. 1	20	Sad Iron Room
7	Drill Press Room No. 2	42	Shipping Dept.
13	Erecting Room No. 1	32	Stable
14	Erecting Room No. 2	5	Stock Room, (Supplies)
4	Foundry	22	Stock Room (Finished Goods)
22	Inspecting Room	26	Timekeeper
8	Lathe Room	3	Tinning Department
1	Machine Room	11	Tinsmith Shop
29	Main Office (CAREY)	16	Tool Room
28	Main Office (ROBB)		
6	Motor Mill & Chopper Dpt.		
12	Milling & Punching Room		
24	Packing Room		
17	Paint Shop		
37	Pattern Safe		
21	Plating Room		
15	Plumber Room		

Fig. 20.—List of Telephone Stations, Posted throughout Plant. Size of Card, 7 by 9 Inches.

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C., September 19, 1903.

The Week's Hardware Trade.

ALTHOUGH there is more doing than a month ago, yet the Hardware and allied trades cannot be described as anything but dull. There has been a recovery during the past week or two in Wrought Hollow Ware and the lighting and heating branches are busy. The Metallic Bedstead trade improves, and there is an improved demand for high-class Lamps for domestic use. The actual conditions of employment which are, after all, the best test, are officially stated for last month to have been:

vise makers, moderate with anvil makers. At Wednesbury it is slack in the coach axle and spring trade.

LOCKS, KEYS AND GENERAL HARDWARE.—With makers of Locks, Latches and Keys employment is fairly good at Wolverhampton and Willenhall. With makers of Hollowware and Builders' Ironmongery it is moderate. In the Hinge trade it is good at Birmingham, moderate at Wolverhampton. In the latter district employment is good with makers of Spring Traps and Hoes and with stampers and piercers, slack with hollow-ware tinnings, and in the bit and stirrup and buckle, chain and cart gear trades.

FILES, EDGE TOOLS, &c.—In the File trade employment is fair at Birmingham, good at Warrington, slack at Wolverhampton, moderate at Oldham. At Sheffield it is moderate with hand forgers and machine cutters, slack with machine forgers, quiet with hand cutters. In the Edge

Messenger Service			
			JUL 15 1903
Call from	Int	In	Service Rendered
Nept	26	7.30 A.M.	460. Chisel 10/-
	27	7.30	Welding 10/-
	28	7.30	Hammer 10/-
	29	7.30	30 ft. nail 10/-
	30	7.30	100 ft. scaffold 10/-
	31	7.30	100 ft. scaffold 10/-
	32	7.30	100 ft. scaffold 10/-
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	34	7.30	100 ft. scaffold 10/-
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	272	7.30	1

quiet. In the silver and electro-plate trades employment on the whole is slack in London and Sheffield, moderate at Birmingham. With Britannia metal workers it is fair at Birmingham, quiet at Sheffield.

WIRE WORK.—Generally employment is slack, but it is moderate at Oldham, fair at Norwich and Bristol.

FARRIERS.—Employment generally is rather quiet. It is reported as improving in London, good in Dublin and Aberdeen, fair at Glasgow and Dundee.

On overseas account South America, particularly Argentina, is a good customer for galvanized sheets, fencing wire, metallic bedsteads, gas fittings, brass and electro-wire and Edge Tools. Chile is the most encouraging South American country next to Argentina. A healthy trade continues with New Zealand, and some good consignments have gone forward to China and Eastern ports, but the South African market is intermittent, and in many respects gives cause for anxiety. I reiterate that cash transactions in South Africa require close scrutiny.

Notes on the Retail Trade.

About two years ago *The Iron Age* reproduced some amusing pictures from the catalogue of J. R. Turner, a well-known ironmonger of Briggate, Leeds. This enterprising gentleman is just now creating quite a little sensation in his own town by means of a "rummage sale." He has these at intervals, and while they last there is always a group of people with amused expressions on their faces gathered round his shop window. The explanation of this is that Mr. Turner's window tickets are always funny, and in the present collection he has excelled himself. For instance, he shows a lot of Graters, and the ticket affixed announces that "These Graters are only 1 penny each, and there is no greater bargain to be had anywhere, except our Nails that are in the front row." A Hand Lantern is described as "A rare specimen of antiquity, found under the floor during alterations." It is offered "with all the dust on it" for 6 pence. A lot of miscellaneous articles is displayed at 6 pence each; and concerning these Mr. Turner takes the public into his confidence, and announces that "No reasonable offer over 6 pence will be refused." He has also a lot of Lamp Cleaners, concerning which he tells us that he has become quite attached to them while they have been in stock; still, he is willing to part with them without regret for 3 pence each. Mr. Turner advises the public to "rush up now and buy before the bargains are snapped up."

A contributor to *The Ironmonger* expresses the opinion that the addition of Electro Plated Wares in country ironmongers' stocks is advisable. The department not only carries with it a good profit, but the attractive appearance of the window adds much to the tone of the shop. It was pointed out that the jewelers, as a general rule, charge an exorbitant profit, and that if prices were marked openly upon these goods in the ironmonger's window a big trade would be induced. The inspection of a Sheffield showroom, coupled with the advice of a seller, induces the writer to offer advice as to the particular stock suitable to be bought.

The writer then goes into details concerning the goods comprised in the selection. The cost of the selection was less than \$200. The writer then adds:

We utilized one-half of a window for these goods, and the display, being something of a novelty, drew much attention. We had only shown them three months before we were able to give several repeat orders for various items. We also advised various secretaries of local athletic clubs who awarded prizes of our new departure, and these gave us a call and inspected our show. We were thus able to effect sales which otherwise would have gone to the jeweler or to larger towns. The firms with whom we opened accounts offered to make up a case of suitable articles for special show where business was likely to result for such wares as cups, tankards, shields, &c., we to pay the carriage to and from the makers. The plan described can be recommended confidently, and if a little push and trouble is taken the department can be made to go. The experience recorded was gained in a town of not more than 10,000 inhabitants. This additional department has also improved a fairly good Cutlery connection. We have also opened up a repair department, and many of our customers have expressed satisfaction with the promptitude and dispatch we have been able to give their orders. The manufacturers sent us a list price for repairing and replating various goods. This opened up new business with many new customers, and tended to an extension of trade.

The Examination Scheme.

I have already referred to the examination scheme of the Ironmongers' Federated Association of Great Britain. The time approaches for the first examination, and there is a good deal of interest being worked up in it. The two leading Hardware papers of Great Britain are giving notes and hints upon the examinations. It may be well to remind readers of *The Iron Age* what are the subjects stipulated in the syllabus. In its present form it contains 16 compulsory and 21 optional subjects. The following are the 16 subjects which are compulsory.

1. Handwriting, orthography and calculation of discounts; also bookkeeping.
2. Gauges in common use for wire and sheet metal.
3. Calculation of areas.
4. Calculation of cubic capacities.
5. Methods of jointing metals, welding, **brazing**, soldering and riveting.
6. Locks; the general principles of construction and various kinds in common use. **Lock furniture and Hinges.**
7. Builders' black and brass foundry. Knowledge of useful stock articles. (The candidate will be required to draw out specifications and make sketches.)
8. Nails, Bolts and Nuts, Screws and Rivets. Various kinds and their common uses.
9. Tools—trade classification as per Sheffield list. Cutlery—table, pocket and blade.
10. Hollow Ware—cast, wrought, stamped, enameled, tinned and galvanized.
11. Wire and Wire Goods.
12. Steam, Gas and Water Tubes and Fittings.
13. Making drawings and instructions for workshop.
14. Standards of weights and measures and their usual divisions.
15. Lamps. Structure, materials and appliances for safety of Petroleum Lamps, Colza and other heavy Oil Lamps.
16. Woodturnery. Builders' and House Furnishing.

The following is a list of the 21 subjects which will be treated as optional:

1. Standards of metric weights and measures and their usual divisions.
2. The physical characteristics of metals and alloys. Definition of ductility, malleability, elasticity and tensile strength.
3. Oxidization or rusting. The particular properties of iron (wrought, malleable, cast and steel), copper, tin, lead, zinc, gun metal, phosphor bronze, pewter, brass, nickel silver, britannia metal and aluminum.
4. Methods of preserving from oxidization. Painting, lacquering, bronzing, plating, tinning and galvanizing.
5. Hardening and tempering of metals.
6. Relative electrical conductivity of metals.
7. Gas fitting. Sizes of pipes for installation of a given number of lights. Choice of metals for a special situation.
8. Sanitary plumbing. Forms of traps, closets and lavatory basins. Sizes of waste pipes. Joints used for lead and iron pipes in sanitary work.
9. Domestic hot water supply.
10. Domestic hot water heating, high and low pressure.
11. Electric lighting (fittings for same) and Electric Bells.
12. Scales, weights, spring balances. The requirements of the Weights and Measures Acts.
13. Rain water goods. Pipes, gutters and fittings.
14. Kitchen Ranges.
15. Stove Grates.
16. Planning of glazed and unglazed tiles.
17. Agricultural Implements—Plows, Harrows, Drills, Mowers, Reapers, &c.
18. Colliery and mill furnishing.
19. Ship chandlery.
20. Cycles and accessories.
21. Guns and ammunition.

In order to pass candidates will be required to obtain at least 50 per cent. of the total possible marks in the compulsory subjects; 60 per cent. will entitle them to a second-class pass, while 80 per cent. of the total possible marks will entitle them to a first-class certificate with honors. The rules stipulate that provision will be made for engrossing on the certificate special subjects, such as electricity, plumbing, electric lighting, building construction, mechanical drawing, bookkeeping, &c. It is even proposed that candidates who have passed the examinations shall be entitled to add letters to the name (a little weakness of ours in this country), such as G.I.F.A., to mean graduate of the Ironmongers' Federated Association, while those who pass with higher honors A.I.F.A.

or F.I.F.A., whether they be associates or fellows. It is a pretty little scheme, has considerable good in it, and in all probability will increase the efficiency of the retail trade in this country.

Meantime, some fear is expressed that the examinations are too stiff to begin with. Thus, it is suggested by one gentleman, that "something more might be done to prevent the first examination ending in a 'frost.'" About the whole scheme, as revealed by the prospectus, there is an air of indefiniteness which rather gives the impression that the parties who have been drawing up the syllabus did not quite know in their own minds exactly how the examination was to be conducted. It is common knowledge that the students of the Science and Art Department and of technical schools prepare themselves by following certain methods, which can be gathered from the question papers set at previous examinations. This advantage cannot, in the very nature of things, be obtained by the first Ironmongers' Federated Association examination candidates, and I think that the gentlemen who will be responsible for the conduct of the examination in January would do well to show their hand a little, and so disarm any apprehension which may exist in the minds of would-be examinees. Probably the examination will be well within the compass of those who know their trade, and, of course, candidates of that caliber only are wanted; but the scheme looks a big one, and its bigness may deter not a few who would like to be early in possession of the Ironmongers' Federated Association diploma.

Stringent Factory Inspection.

It is not generally known how stringent is factory inspection in Great Britain. A case came up last week where a firm of Sheffield silversmiths were summoned by the Chief Inspector of Factories for employing nine women working after hours on August 20. The law is that work cannot be continued after 8 o'clock without special permission from the Home Office. A partner in the defendant firm stated that they received instructions on the day in question that some goods on order must be finished that day. There was no possibility of communicating with the Factory Inspector. Had they not finished these goods the firm would have had them on their hands and would have lost a good customer. It was only the first time they had worked overtime for months, and it was a case of their retaining their customer or being brought before the court. The chairman of the magistrates expressed the opinion that the Home Office sometimes does not really know the technicalities involved, and that they might act differently if they did. At the same time the regulations were law, and a fine of 10 shillings, including costs, was imposed.

A Note on Irish Tenders.

It is notorious that buyers in the three southern provinces of Ireland are not overanxious to place their orders in England. If they can place them with Irish manufacturers they are delighted, and failing that America has as good a chance as Great Britain. An instance of this came up before the Clonmel Guardians this month, when the tenders for the supply of 24 Iron Bedsteads was discussed. It was pointed out that one of the tenderers made his Bedsteads in Dublin, but that they were 5 shillings higher than the quotation from England. On a poll the Irish tender was accepted by a large majority. This point is worth noting.

AMERICAN BOLT COMPANY.

THE AMERICAN BOLT COMPANY, Birmingham, Ala., who are a consolidation of the old Southern Bolt & Nut Company of Birmingham and the American Bolt Company of Lowell, Mass., are erecting new works at East Birmingham. There are two main buildings, one 160 x 50 feet, and the other 160 x 75 feet, the office being temporarily in the latter. In the near future the office will be in a separate building, and the company also expect to build a rolling mill before long. All the machinery is of the latest type. Manufacturing has been commenced and the whole of the works will be in full operation early in October.

JAMES BRADBURY CURTIS.

JAMES BRADBURY CURTIS, a well-known traveler in Southern territory, was drowned while sailing in a yacht on the Ashley River, Charleston, S. C., on the 9th ult. Mr. Curtis was born on January 13, 1867, at Freeport, Maine. He commenced his business career with Bigelow & Dowse Company, Boston, representing them as traveling salesman in New England for about 14 years. This connection was severed about four years ago, since which time he had been representing the Simonds Mfg. Company, Fitchburg, Mass., in the South. Mr. Curtis, who was unmarried, was held in very high regard by his employers. He was a Knight Templar and also an Elk. His brother, George T. Curtis, is also identified with the company as a traveling salesman.

TRADE ITEMS.

THE CHICAGO HARDWARE BOWLING LEAGUE of Chicago has been incorporated as a social organization. The incorporators are George B. Howard, John Laemmer and G. H. Schlam.

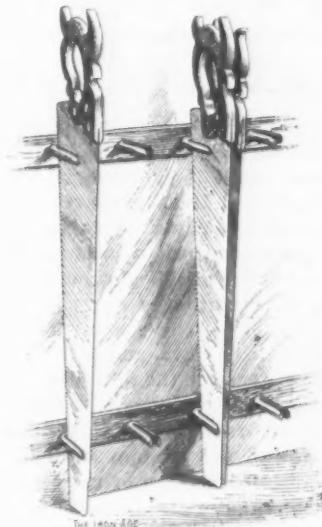
AT the regular monthly meeting of the Chicago Retail Hardware Association on September 25 it was decided to give a ball in January. A Committee of Arrangements was appointed by the chair, consisting of G. R. Lott, W. H. Bennett and J. L. Smith. It is probable that Illinois Hall will be selected as the place of entertainment.

THE SCRANTON & Co., New Haven, Conn., who have been making a large line of Scranton Nail Pullers, have decided to withdraw from the market all styles except Nos. 2B and 3B.

TREINIS BROS., who were at 88 Chambers street, New York, until burned out September 15, have re-established themselves in new quarters at 498-500 Broadway, between Broome and Spring streets, and now have the new plant in running order. They have doubled the amount of floor space and working force, and will make a determined effort to get a new line of their goods speedily in the market. They manufacture Football and Baseball Suits and a general line of Boxing Gloves, Catchers' Gloves and Mitts, Punching Bags, Platform Punching Bags and similar goods for athletic and sporting purposes.

DISPLAYING HAND SAWS.

IN the store of the E. C. Sharpe Building & Lumber Company, Seymour, Conn., Hand Saws are kept in a cabinet and protected by glass doors. In the back of this cabinet are run two horizontal strips of wood, as shown in the accompanying illustration. In these, holes are



DISPLAYING HAND SAWS.

bored and clothespins inserted in the openings on which are placed the Saws, as shown. As many as three or four Saws can be put in each pair of pins. This makes a convenient way of keeping these goods and permits them to be easily removed.

A WELL ILLUSTRATED CIRCULAR.

A. J. NEWGARD & SON, New Richland, Minn., a short time since distributed a circular, the accompanying illustration of which is a reduced reproduction. The circular was about 12 x 18 inches in size, printed on a good quality of paper. The firm have a mailing list book, in which are names of desirable people to whom their



printed matter is mailed. This book was partly made up from a newspaper subscription list. Other names in the book were obtained from farmers living in their vicinity. The firm remark that farmers like to get circulars through the mail. It is the practice of the firm to change their advertisement in the local newspaper every week.

FREE HEAT ON THE SIDEWALK.

J. A. SELTZER & SONS of Shelby, Ohio, struck a popular chord last December by furnishing heat for pedestrians who passed their place of business. They placed one of their best Heating Stoves on the sidewalk, next to the curb, on a cold, stormy day, with a number of joints of stove pipe attached to insure a good draft. A roaring fire was built, and this glowing through the mica doors attracted the attention of every passerby, and was the cause of a great deal of comment. The operation was repeated on several cold days, and it proved the most attractive advertising scheme the firm had ever undertaken. Passersby would collect more out of curiosity than for any benefit derived from the heat. It seemed to appeal more to the sense of humor than anything else, and its success was due to the novelty of the experiment, rather than its practical value.

JOHN A. MOORE, vice-president and treasurer of the Moore Hardware & Iron Company, Denver, Col., died at his home in that city September 21, after an illness of five months. As a member of the above firm for the past 20 years, Mr. Moore had a large circle of friends in the Hardware trade. A widow and two children survive him.

CONTENTS.

	PAGE.
The Stockbridge Motor Driven Shaper. Illustrated	1
Gun Foundry Plans Modified by Ordnance Bureau	2
Coal Production in 1902	3
Carborundum Company Extensions	3
Canadian Notes	4
Crocker-Wheeler Motor Driving Barret Boring Machine. Illustrated	5
Lake Mining Matters	6
Notes from Mexico	7
An Indicating Anglemeter. Illustrated	8
Notes from Great Britain	10
Pacific Coast News	12
The Consolidated Inclinable Open Back Power Press. Illus.	12
Industrial Affairs in Scotland	14
A World's Record in Coal Hoisting. Illustrated	15
Dominion Iron & Steel Company's Coal Arrangements	15
Fall Meeting of the Mining Engineers	15
Steel Shipbuilding	16
The Hisey-Wolf Portable Electrically Driven Drill. Illus.	17
The Chicago Sand Rammer. Illustrated	17
The Hydraulic Power & Mfg. Company, Niagara Falls	17
The Waterbury Farrel Nut and Threading Machines. Illus.	18
An Artificial Niagara at St. Louis	19
Strikes in the Shipbuilding Trade	19
The World's Maritime Statistics	19
An English Double Bladed Power Hack Saw. Illustrated	20
The Johnson Cap and Peep Hole for Furnace Tuyeres. Illus.	20
Interpretation of the Amalgamated Scale	21
"Back Charging" Not an Invention	21
Lake Labor Troubles Settled	21
National Rolling Mill Company's Vincennes Plant	21
Editorial	
The Legal Status of the Boycott	22
Speculation Perverting Trade Currents	23
The Outlook for the College Man	24
Correspondence	25
The Consolidated Lake Superior Company	25
Personal	26
The Tin Plate Export Trade	26
The American Can Company	26
Manufacturing	
Iron and Steel	27
General Machinery	27
Power Plant Equipment	27
Foundries	28
Bridges and Buildings	28
Fires	28
Hardware	28
Miscellaneous	29
The Victoria Falls Power Scheme	29
The Iron and Metal Trades	
A Comparison of Prices	30
Chicago	30
Philadelphia	32
Cleveland	33
Cincinnati	33
Pittsburgh	34
Birmingham	35
New York	36
The New York Machinery Market	36
Iron and Industrial Stocks	38
The Philadelphia Machinery Market	38
Hardware	
Condition of Trade	40
Notes on Prices	42
A Western Merchant's Suggestions on Hardware Window Display	44
Disaster Taken Advantage of	44
Factory Cost Methods	45
British Letter	47
American Bolt Company	49
James Bradbury Curtis	49
Trade Items	49
Displaying Hand Saws	49
A Well Illustrated Circular	50
Free Heat on the Sidewalk	50
Moore & Hendley Hardware Company	51
New York State Association of Hardware Jobbers	51
Price-Lists, Circulars, &c.	51
The Crescent Band Sprue Saw	52
Combination Mirror and Plate Glass Shelf	52
Duplex Screw Driver	52
Mayhew New Screw Drivers Nos. 700 and 710	53
Nickelated Brass Lavatory Legs	53
The Pyro Heater	53
Wilcox Pole Holders and Axe Brackets	54
Bishop Hand Made Saw No. 1	54
Double Action Star Diaphragm Pump	54
Umbrella Clothes Bars	54
The Casey Lantern	55
The Brownie Spring Ice Skates	55
Morrill's Special Saw Set	55
Rome Nickel Plated Copper Goods	56
Clark Corn Husker	56
Quackenbush Spring Nut Crackers	56
Current Hardware Prices	57
Current Metal Prices	64

MOORE & HANDLEY HARDWARE COMPANY.

THE MOORE & HANDLEY HARDWARE COMPANY, Birmingham, Ala., who have just erected new buildings among the largest devoted to the jobbing Hardware trade in the Southern States and costing \$250,000, commenced business in 1882 as a retail house on Second avenue, between Twenty-first and Twenty-second streets, occupying one floor of a building, 25 x 100 feet. The original capital of \$5000 was furnished by James D. Moore, Wm. A. Handley and B. F. Moore, who are president, vice-president and treasurer respectively of the present company, and who are sole owners of the stock and property. In 1883 the firm removed to somewhat larger premises on First avenue, between Twentieth and Twenty-first streets, where they remained two years and then bought property at the corner of Morris avenue and Twentieth street and erected their own building. In 1888 they removed to the location they are just leaving. Two important changes were made at that time, first the dropping entirely of retail trade and second the incorporation of the business under the State laws of Alabama as the Moore & Handley Hardware Company. Since that time the volume of business has continued to enlarge, the total for 1902 being \$100,000 more than any previous year. The necessity of more extensive facilities had been forcing itself upon the members of the company, when a fire on October 8 last year, by which nearly all of their buildings were destroyed, made earlier action imperative.

The new premises of the company consist of two brick buildings. One has a frontage 82½ feet on Twentieth street, extending along Avenue A 150 feet, having five stories. The other has 182½ feet on Twenty-first street, running along Avenue A 175 feet, and is of three stories. The total floor space of the two buildings is 160,000 square feet approximating 3½ acres. The building on Twenty-first street has a switch, connecting with the tracks of the Southern Railroad, 175 feet long, on which five cars can be loaded or unloaded simultaneously, the floors of entry and shipping being on level with the floor of cars and on the other side with level of drays. Entrance to the five-story building on Twentieth street is in the center, one-half of the first floor to the right being taken up with the general offices, the space occupied being 40 x 125 feet. At rear of offices is a large fire proof vault for use on first and second floors. The left half of first floor is set aside as a display room, having plate glass windows across the whole front on Twentieth street, and also two such windows 10½ feet wide on Avenue A. There is a passenger elevator near show windows, giving access to every floor of the building, and a freight elevator in the rear doing the same service. At the rear of first floor there is a driveway of 15 feet, insuring protection to goods on drays in stormy weather. The second floor is devoted to storage of Cutlery, Shelf Hardware and Mechanics' Tools; third floor to Tin and Granite Ware and Household Goods; fourth floor to Belting, Harness, Collars and kindred supplies, and the fifth floor to surplus stock of all kinds. The two buildings are separated by a fire proof wall, to give greater protection, and are also connected by two arches on each floor to insure rapid transit of goods from one to the other when necessary. By the side of each archway there is an elevator, that near railroad track being used for receiving and the other for shipping. On first floor of second building heavy stock is stored, such as Bar Iron and Steel, Wrought Iron Pipe, Shafting, Railroad Spikes, Nails, &c. Here also is a machine for cutting and threading pipe. The second floor is taken up with the assemblage of all goods requiring to be packed in boxes or kegs for transportation, and the third floor will be reserved for the keeping of all goods to be shipped in original packages.

The company expect the building will be ready for full occupancy and transaction of business on October 1. The territory they cover is the States of Mississippi and Alabama, together with Western Georgia and Northern Florida. A \$300,000 stock of goods is regularly carried. It may be added that the company have recently built a sash, door and blind factory at a cost of \$100,000.

NEW YORK STATE ASSOCIATION OF HARDWARE JOBBERS.

THE annual meeting of the New York State Association of Hardware Jobbers was held at the Rochester Club, Rochester, N. Y., on Friday, September 18. The following officers were elected for the ensuing year: President, Griff D. Palmer, Rochester, N. Y.; vice-president, Henry W. Millar, Utica, N. Y.; secretary-treasurer, Joseph Born, Syracuse, N. Y.; directors, Hobart Weed, Buffalo, N. Y.; Irving D. Booth, Elmira, N. Y. After the business meeting the members present were entertained by their Rochester friends at the Rochester Club.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers issuing new catalogues or price-lists are requested to send to THE IRON AGE two copies—one for the Catalogue Department in the New York office, and one for the Iron Age Library of Trade Literature in London.

H. M. QUACKENBUSH, Herkimer, N. Y.: Illustrated catalogue and price-list relating to Air Guns, Safety Cartridge Rifles, Pocket or Bicycle Rifle, Air Gun and Pistol Ammunition, Targets, &c. Also catalogue and price-list illustrating Nut Picks and Cracks.

E. C. ATKINS & Co., INCORPORATED, Indianapolis, Ind.: New Inserted Tooth Circular Saws. A booklet, unique in shape and artistic in make up, is devoted to Illustrations and descriptions of Inserted Tooth Circular Saws.

ISAAC CHURCH, 1521 Walnut street, Toledo, Ohio: Price-list illustrating Expansion Bolts of different patterns for a variety of purposes. Also Anchor or Toggle Bolts.

R. WOODMAN MFG. & SUPPLY COMPANY, 63 Oliver street, Boston, Mass.: Illustrated catalogue and price-list of Ticket Punches, Ticket and Dating Stamps, Baggage Checks, Plates, Badges, Perforating Machines, Numbering Machines, Uniform Buttons, Key Tags, Sealing Presses, Speed Indicators, Car Pushers, Steel Stamps, Letters and Figures, &c.

THE SAMUEL C. TATUM COMPANY, Cincinnati, Ohio; New York office, 15 Warren street: Illustrated price-list devoted to Letter Boxes, Twine Boxes, Truck Casters, Dumb Bells, Quoits, Hardware Trucks and Joiners' Clamps.

A. LUDWIG, 75-77 Spring street, New York: Special illustrated catalogues Nos. 1 and 2 relating to Brass Trimmings for plain and fancy paper boxes, and for cigar and fancy boxes.

KEYSTONE LOCK WORKS, Lancaster, Pa., E. T. Fraim, proprietor: Catalogue No. 15, devoted to Padlocks and Night Latches. These goods are shown in pressed steel, wrought, cast and malleable iron, steel, bronze, brass, nickel and aluminum.

CHICAGO FLEXIBLE SHAFT COMPANY, La Salle avenue and Ontario street, Chicago, Ill.: Clark Carriage Heaters are illustrated and described in a neat booklet. The heat is obtained from cakes of prepared coal.

THE NATIONAL SUPPLY COMPANY, 5 and 7 West Lombard street, Baltimore, Md.: Circular devoted to the Twentieth Century Patented Christmas Tree Holder.

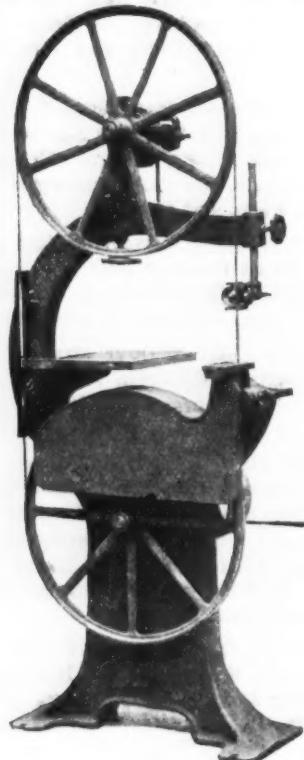
F. P. SMITH & Co., Sharon Hill, Pa.: Illustrated price-list relating to Spring Cotters, Flat Spring Keys, Belt Hooks, Hog Rings and Special Wire Goods.

THE LOWE BROS. COMPANY, Dayton, Ohio: "The Little Blue Flag," a pamphlet containing Paint information and business facts for the assistance of the agents (and their clerks), salesmen and makers of the Lowe Bros. Paints.

THE HOPKINS & ALLEN ARMS COMPANY, Norwich, Conn., are at work on a lithograph folder which will describe some of their specialties. A large quantity of these folders is being prepared, and the company will be pleased to supply them to the trade with the merchant's imprint on them on application to that effect.

The Crescent Band Sprue Saw.

The Crescent Machine Company, Leetonia, Ohio, have just put upon the market the band sprue saw illustrated in the accompanying engraving. This machine is for use in brass foundries, for sawing the sprues off brass castings. The makers point out that a common shear sprue cutter always leaves a short stub end that has to be ground off, which operation takes considerable time, besides wasting material. By the use of their band saw this waste is obviated, as the saw will shave the sprues and fins off close up against the casting, making grinding unnecessary. The machines that the company have heretofore made for this purpose have proved so satisfactory that they have taken pains to equip their 26-inch band saw, shown herewith, especially for this work. From the illustration it will be seen that the regular table is replaced by a special rest, which will permit irregular



The Crescent Band Sprue Saw.

shapes of castings to be passed to the saw more readily than could be done on a flat table. This special rest also forms a shield to prevent pieces of a casting from coming between the saw blade and the lower wheel. The manufacturers say that when the operator once becomes accustomed to running the machine, he can saw off sprues as fast as they can be cut on a common cutter. The machine is so arranged that a regular table can at any time be attached for sawing wood or other material in the regular way. The weight of this machine is 500 pounds, and the floor space required is 25 x 33 inches. The length of the saw blade is 13 feet 9 inches, and its speed for brass is 175 revolutions a minute. With each of these machines a Wright's guide for use above the table, a brazing clamp, brazing tongs and two saws $\frac{3}{8}$ inch wide for sawing metal are provided.

Two burglars effected an entrance through the tin shop to the store of the Branson & Griswold Hardware Company, Trinidad, Col., on the night of the 20th ult. between 11 and 12 o'clock, and on entering the main salesroom were each met with a charge of Buck Shot from a Shotgun in the hands of one of the company's trusted employees, Oliver Criswell, who sleeps in the store. One of the burglars, said to be an escaped convict from the Folsom, Cal., Penitentiary, died before morning, and it is expected that the other will certainly be apprehended, as from the trail of blood left in his track he was probably badly wounded. This is the fourth attempt made to rob the company's store during the past few years.

Combination Mirror and Plate Glass Shelf.

The Charles Parker Company, Meriden, Conn., and 32 Warren street, New York, have put on the market as a part of their comprehensive line of bathroom fixtures the combination mirror and glass shelf, No. 3005, here illustrated. This is a finely made article of polished and



Combination Mirror and Plate Glass Shelf.

nickled brass with beveled French plate glass mirror, the dimensions of which to outer edges of the oval are 30 x 18 $\frac{1}{2}$ inches. The French plate glass shelf with rounded edges is 25 x 8 inches. The mirror is so pivoted that it can be tilted at different angles, and raised or lowered on the guide rods.

Duplex Screw Driver

S. I. Snyder, Clearfield, Pa., is offering the screw driver and holder shown herewith. In Fig. 1 the holder is shown, consisting of a thin spring, which can be revolved, so that by turning it around the tool becomes an ordinary screw driver, having the advantage of the holder only when required. The tool is made of English tool steel, hardened and tempered throughout. It is milled at the point to such a shape as to avoid the driver slipping



No. 1.

No. 2.

Duplex Screw Driver.

out of the screw slot and marring the head of the screw when used with or without the spring. In using the spring holder the driver is taken in the right hand, and the screw in the left. The spring is placed in the slot at an angle of 45 degrees, at the same time bringing the driver in line with the screw, when it will slip in place, as in Fig. 2. The tool was originally designed for use in repairing clocks and for driving screws to be inserted in places inaccessible to the hand. Latterly a demand has arisen for the tool from carpenters, electricians, piano tuners and others, who are now being supplied.

Mayhew New Screw Drivers Nos. 700 and 710.

The accompanying cuts show new screw drivers put on the market by H. H. Mayhew Company, Shelburne Falls, Mass.; New York office 45 Murray street. In Fig. 1 is shown driver No. 700 having a revolving head which runs on hardened steel balls. This arrangement is referred to as giving the driver superiority over ratchet



Fig. 1.—Screw Driver No. 700.

devices on screw drivers, as the head remains stationary in the palm of the hand, allowing full strength of the fingers and hand to be applied to the octagon barrel of the handle. This permits the driver to be used for either driving or withdrawing screws with equal facility. The manufacturers also state that carpenters who have used the driver say that the soreness resulting from the use of ratchet drivers is totally absent. The tool is made of high grade steel and the old Monarch ferrule is still

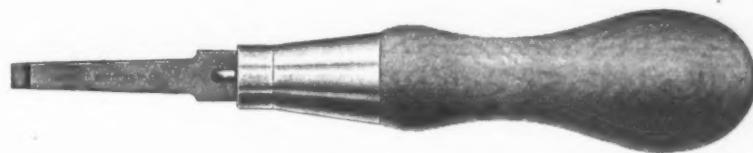


Fig. 2.—Screw Driver No. 710.

retained. The handle is of Mexican redwood, dense and tough. The balls run between two steel plates to reduce friction to a minimum. In Fig. 2 is illustrated screw driver No. 710, and in Fig. 3 the manner of adjusting it. This is a double blade driver of strong construction. A heavy drawn seamless ferrule allows a malleable iron socket to be driven firmly into the wood, and is slotted to allow one-half of the blade to be retained within the

ferred to as requiring no cleaning, repairing or attention of any kind. The heater is fitted with a rubber nipple, which hugs the gas burner, on which it is slipped for use, to prevent the escape of gas into the room. Upon the principle that heat is capable of reflection the same as light the heater was designed. By its peculiar shape and construction, it is remarked, the heater reflects the heat to the floor, forcing the cold air from the floor upward and causing a constant and complete circulation. It is

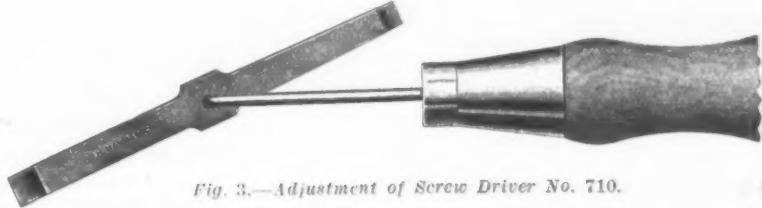


Fig. 3.—Adjustment of Screw Driver No. 710.

handle; while cross slots allow the center of the blade to stand the purchase when in use. Withdrawing the blade from the handle and reversing it allows the other end to be put into use. The tool is particularly designed for use with machine screws, one blade being smaller at the point than the other. It is also designed for electrical equipment houses in assembling instruments, although it is equally desirable for other purposes. The manufacturers remark that the Mayhew quality is maintained in both of the drivers illustrated.

Nickelated Brass Lavatory Legs.

The Charles Parker Company, Meriden, Conn., and 32 Warren street, New York, have, in addition to about 60 other patterns of nickelated brass lavatory legs, put on the market the No. 94 pattern here shown. Those regularly

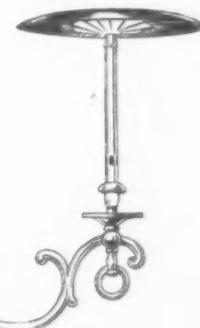


Nickelated Brass Lavatory Legs.

made of this pattern are for 5-inch aprons. A companion pattern, No. 95, is very similar in design, except that the upper portion makes a right angle instead of being el-

explained that the heater is so adjusted that with the usual gas main pressure only 6 feet of gas can pass through the burner each hour, at an average cost of about 1/2 cent. By employing the Bunsen burner principle, it is pointed out that the heater admits the proper proportion of air at the exact point of combustion, and that in the resulting blue flame every heat unit is accounted for. In addition to ordinary uses the heater may be used to keep

the night temperature in a sick room where desired, to heat baby's food, &c. It is stated that the heater is al-



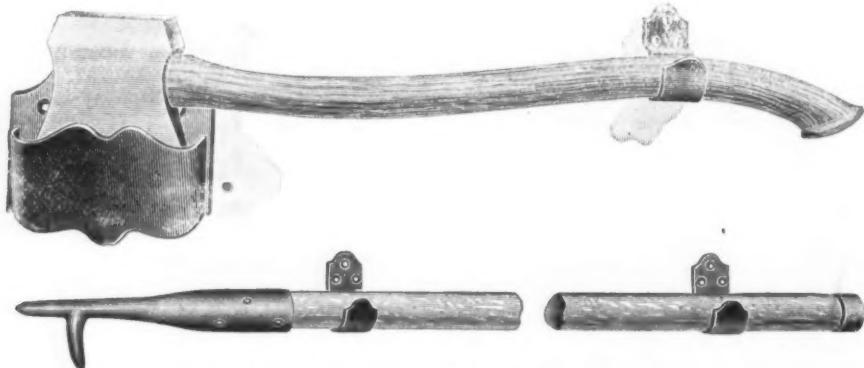
The Pyro Heater.

ways ready for use, that it gives off almost no light, and that it is never troublesome to an infant or sick patient. A patent is pending on the heater.

THE EDWARDS MFG. COMPANY, Cincinnati, Ohio, are nesting the Edwards Patent Stove Pipe and shipping it in knocked down form for the convenience of their customers. The pipe is, we are advised, meeting with much favor, and the demand in consequence is growing.

Wilcox Pole Holders and Axe Brackets.

The pole holders and axe brackets shown in the accompanying illustration are manufactured by the Wilcox Mfg. Company of Aurora, Ill., and have been evolved from the necessity arising from the passage of laws requiring



Wilcox Pole Holders and Axe Brackets.

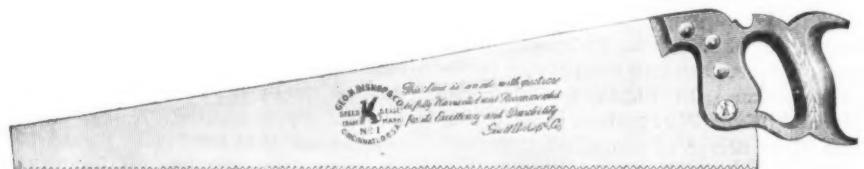
axes and poles to be carried in all available places in public buildings. The holders and brackets are made of brass and steel, polished, steel plated or japanned.

Bishop Hand Made Saw No. 1.

The accompanying cut represents a line of saws, including hand and rip, hand made of extra refined Amer-

ican spring steel, patent ground and tempered. They are hand smithed, hand blocked, hand filed and set. The manufacturers remark that mechanics value a good saw, particularly when narrowed down by use. To meet this demand Geo. H. Bishop & Co., Lawrenceburg, Ind., and Cincinnati, Ohio, are putting on the market these saws in 20, 22, 24, 26 and 28 inch. The 26-inch blade is $1\frac{1}{2}$ inches at the point and about 6 inches at the heel. Shorter lengths than 26 inch are the same width at the point, but vary to 5 inches at the heel. The saws are referred to as light and rigid, full taper ground to the back, and as having life fully equal to those of regulation width.

easily transported; that it can be used as a suction pump or as a suction and force pump; that the construction of the valves is such that they will not clog with either sand, gravel or mud; that the pump having a double action the water is kept continually in motion, and the extra power used in stopping and starting the flow is thus saved; that the pump can be placed anywhere on the work and the water carried up over a bank, wall or any

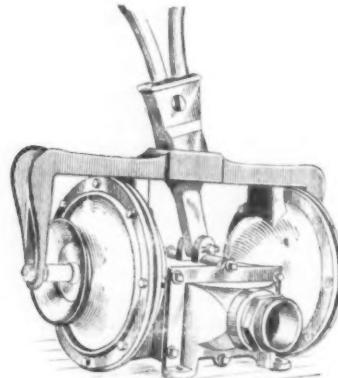


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Double Action Star Diaphragm Pump.

The Boston & Lockport Block Company, 160 Commercial street, Boston, Mass., are putting on the market the



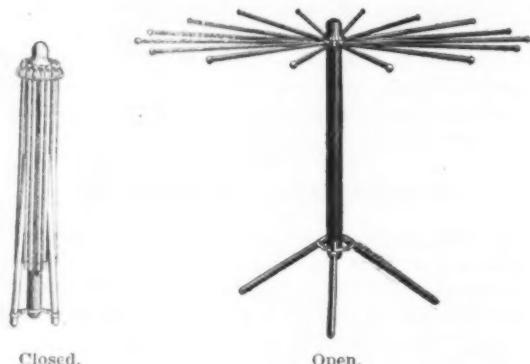
Double Action Star Diaphragm Pump.

pump herewith illustrated. It is referred to as a hand pump, entirely new in its mechanical construction, as being frictionless and nonchokable, and as desirable for

other obstruction after leaving the pump, and that as the inlet and outlet connections are made with hose couplings, the pump can be placed anywhere inside a building and the water discharged into the street or sewer without any leakage or moisture at the pump.

Umbrella Clothes Bars.

The umbrella clothes bars shown in the accompanying illustrations are manufactured by the Martercross Company, 40 Dearborn street, Chicago. The essential features of the rack are a revolving head supporting inde-



Umbrella Clothes Bars.

pendently adjustable bars, and all unnecessary steps are avoided in utilizing the device because of these features. With all the bars in position, 32 feet of drying space are afforded. The stand is portable, weighing but 7 pounds, and when closed measures 6 x 36 inches. The device is made of nicely finished hard wood, and the metal parts are japanned.

The Casey Lantern.

The Keystone Lantern Company 1607 Real Estate Trust Company Building, Philadelphia, Pa., are offering the lantern shown herewith, designed for all railroad purposes and general use. The distinctive features claimed for the lantern are: Absolute control of the wick at all times, without removing the globe or oil cup to regulate it, and absolute protection against extinction by wind and the consequent inconvenience of relighting. In the illustration the casing of the base is cut away, leaving the oil cup exposed, to better show the construction and operation of the lantern. The outer casing is fixed and the oil cup can be revolved. To raise or lower the wick before or after the lantern is lighted the oil cup is slightly turned from below, the position of the hand in the illustration indicating how this is done. Moving the wick is accomplished by the pinion engaging in the stationary rack, which permits the raising or lowering of the wick without opening the lantern and expos-

*The Casey Lantern.*

ing the flame to direct air drafts. The outer casing is provided with a series of air inlet openings, and within the casing, and separated by an annular space, are a series of air passages on a lower level, admitting air from the annular space to a space formed by the inner casing and the oil cup. By this arrangement the air admitted to the burner is caused to follow a winding path, to break the force and to prevent a direct draft reaching the flame. The hood is hinged, and is turned back for removing or replacing the chimney. The upper portion of the hood is provided with a series of air exits, protected on the inside by a shield. The oil cup is removable from the lantern for filling, lighting or rewicking, by releasing a spring band attached to the casing, and giving the oil cup a slight turn. To remove the burner the oil cup is grasped with the left hand, the thumb being placed on the pinion and the first finger on the opposite side of the burner—to prevent the wick being turned down into the oil cup—when the bottom of the cup is turned to the left which disengages the burner. It is replaced by turning the cup to the right. The lantern is referred to as permitting easy access to all parts; as clean and substantially made, and as saving oil, because when lighted and not in actual service the light can be turned down.

The Brownie Spring Ice Skates.

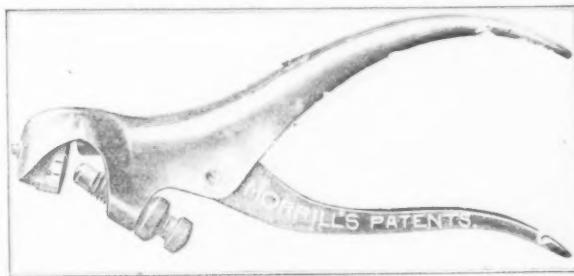
The skates shown in the accompanying cuts are made of open hearth steel, with hardened and tempered runners. The springs are crucible steel, all tested and warranted, polished and nickelated throughout. The skates are provided with a device to adjust the toe of the skate a desired distance to the inside of toe of the foot, a position it is remarked, that is a desirable feature for correct and

*The Brownie Spring Ice Skates.*

easy skating, placing the skate in the center of the foot. It is explained that the spring acts on the same principle as a spring board to a jumper, that it drives the skater along fast and easily, that there is no jar nor lame ankles over rough ice. For fancy curves, heel and toe skating and for fast work forward or backward the skate is highly recommended. The spring being located at the forward end of the skate, it is shown, increases or softens the action of the skater as he or she ends the stroke, in accordance with the will of the skater. The skates are also used for jumping and racing, while at the same time they are intended as much for beginners as for fast skaters and experts. The skates are offered by the Brown Spring Ice Skate Company, Webster City, Iowa.

Morrill's Special Saw Set.

Charles Morrill, 277 Broadway, New York, have just added the Special saw set here shown to their line of Morrill's saw sets. Some of its distinguishing features as described by the manufacturer are that the anvil instead of being placed at right angles to the path of the plunger, as in their No. 95 saw set, is inclined, as in their No. 1 saw set. This prevents breaking the point of the plunger, as it allows the plunger to be made larger and

*Morrill's Special Saw Set.*

stronger and to be more evenly tempered. It also enables the workman to see plainly how much set he is getting on the saw. As now made, the under handle has been made the movable handle, thus doing away with any wobbling of the saw set and minimizing the motion, so that accidental breaking of saw teeth is avoided. The gauge screw is now secured at any point by means of a lock nut. The saw set has been shortened somewhat, and the plunger has been incased, thus keeping out dirt which clogs the spring and enhancing the appearance of the tool. The action is similar to that of the No. 95 saw set, the operator simply having to know the number of points to the inch of his saw, then turning the revolving anvil to the corresponding figure and setting the gauge screw as desired.

Rome Nickel Plated Copper Goods.

The pots and kettles shown in the accompanying cuts have recently been put on the market by the Rome Mfg. Company, Rome, N. Y. The 2100 series, Fig. 1, include nickel plated copper tea and coffee pots, with sheet metal trimmings. In this series they have obtained in the trimmings the appearance of cast white metal, and much more durable material. The pots are made in seven sizes, from $\frac{1}{2}$ pint to 5 pints in-



2100 Series.



2200 Series.



1200 Series.

Fig. 1.—Rome Nickel Plated Copper Tea and Coffee Pots.

clusive, the smaller ones being individual sizes. In Fig. 1 the 2200 series represent stag horn cold handles, as applied to nickel plated copper ware, of which the manufacturers believe they are the only makers. A corresponding line of the teapots is also made, both lines having stag horn handles, sheet metal trimmings and metal knobs, in the same sizes as the 2100 series. In Fig. 1 1200 series is represented a patented method of attaching enameled wood handles, making them stronger, durable and practically a part of the pot. Including coffee pots, the goods are of nickel plated copper, tinned inside, handles always

fact that one motion of the arm only is necessary to strip the ear, thus saving time in work. The plate is designed to bend easily and thus to fit the hand, being made of soft steel, while the hook is of hard steel. The point being bent outward catches all the husks, assisting



Fig. 2.—Nickel Plated Copper Tea Kettle, 0300 Series.

cold, knobs securely fastened, with no solder or burr on the inside of the cover. The pots have reinforced wired tops, swaged bodies and double seamed perfectly flat bottoms. They are made in seven sizes, from $\frac{3}{4}$ to 6 pints inclusive. Tea kettles, 0300 series, Fig. 2, which are made from 20 ounce copper, with spouts and breasts actually double seamed to the body, are referred to as being entirely new in design and as being in every way superior in construction, finish and weight of metal used. The pots are nickel plated and are made flat and pit bottoms, in seven, eight and nine sizes. The body is made from one piece of metal, tinned inside. The bail is made of heavy sheet brass with wired edges and embossed centers, securely fastened to the wood handle by a solid steel rod running through and riveted on both ends. The ears are heavy, with handle rests. Improvements have been made in many of the company's older lines of goods, all of which are shown in their catalogue D, recently issued.

Clark Corn Husker.

The corn husker shown in the accompanying illustration is manufactured by R. F. Clark, Chicago. The principal features which are said to commend this article are the construction of the plate and the hook, and the

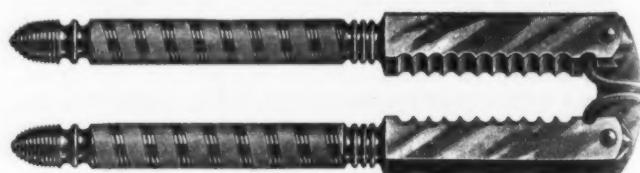


Clark Corn Husker.

the shedding, and, when placed at the proper angle, prevents glancing. The leather is referred to as being durable, strong and soft, designed for comfort and snug fitting. These hooks are designated as No. A and No. B. No. A has long wrist leather, but No. B is provided with $2\frac{1}{2}$ inches extra band to give support and protection to weak wrists.

Quackenbush Spring Nut Cracks.

H. M. Quackenbush, Herkimer, N. Y., is putting on the market nut cracks with springs, as shown herewith. The cracks are constructed of steel, chased with



Quackenbush Spring Nut Cracks.

designs and heavily plated in nickel or silver. The corrugations are sharp, which cut the nuts and largely reduce the labor of cracking. These cracks are also furnished without springs.